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STEEL

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PRODUCTION · PROCESSING · DISTRIBUTION · USE

Announcing the 1939

MACHINE TOOL SHOW

THE GREATEST EXHIBIT OF THE TOOLS OF INDUSTRY EVER PRESENTED

Cleveland

OCTOBER 4-13, 1939

NATIONAL MACHINE TOOL BUILDERS' ASSOCIATION

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EXHIBITS

The 195 exhibits, occupying 150,000 square feet of floor space, will display nearly 1,000 machines. These will include every type of machine tool in its most modern form, and in full operation . . . also many types of allied equipment and accessories. Every facility will be afforded visitors for careful, thorough inspection.

MACHINE TOOL CONGRESS

A Machine Tool Congress, sponsored by the professional engineering societies, will be held in evening sessions during the period of the Show. Foremost authorities will speak at the forum meetings of this Congress, on important developments in manufacturing methods.

ATTENDANCE

Attendance will be limited to qualified visitors. Admission to the Machine Tool Show will be by registration only. Among those attending will be officers and directors of manufacturing companies, operating executives, engineers, production men, buyers. More than 50,000 people visited the Machine Tool Show of 1935.

YOUR SMARTEST INVESTMENT TODAY . . . MODERN MACHINE TOOLS

As the Editor Views the News

■ OPTIMISM in the steel industry is increasing (p. 67). Ingot production last week (p. 21) moved up 6 points to 56½ per cent, highest rate since mid-March. Schedules close to 60 per cent are indicated for the next few weeks. Demand is sustained or higher from most directions. Farm equipment manufacturers are taking more steel. Structural requirements continue brisk. Household appliance fabricators are good customers. Specifications from automobile partsmakers are increasing. The price of scrap, a barometer, has risen further in some important centers . . . Net earnings of 35 representative metalworking companies (p. 20) in the first half of 1939 averaged 85.5 per cent higher than in the corresponding period in 1938. Steel company earnings so far reported are better than expected.

• • •

Buyers Like System

Of a large number of steel buyers responding to STEEL's questionnaire, 51 per cent (p. 15) prefer the existing basing system to that which prevailed prior to June, 1938; 13.3 per cent do not like it; 35.7 per cent have no preference. Only 17.3 per cent declared they are in favor of additional basing points. . . . To provide even the 1929 standard of living, we have neither the mechanical equipment nor the necessary supply of skilled labor, according (p. 17) to Allen W. Rucker and N. W. Pickering. They list fallacies in the reasoning of the advocates of technological restrictions. Management, writes a manufacturer (p. 9), should give due attention to problems of technological unemployment that raise embarrassing social questions. This thinking closely parallels that (p. 34) of STEEL's editors.

• • •

Order Labor Board Probe

In response to "tremendous nationwide pressure" the house last week (p. 19) ordered a sweeping investigation of the national labor relations board. . . . Of interest to the scrap trade is the view of Jesse H. Jones (p. 25) with reference to the proposed $500,000,000 railroad equipment leasing appropriation in the President's spend-lend program; if he has his way the old equipment to be dismantled will be scrapped by WPA. . . . To reduce cost of distributing its steel products in the Chicago district (p. 17) Jones & Laughlin Steel Corp. has established an Ohio river terminal at Madison, Ind. . . . Unemployment in the United States in May for the first time this year (p. 23) fell below 10,000,000. . . . Lake Superior iron ore shipments in 1939 now are estimated (p. 32) at 34,000,000 tons.

• • •

Advises Tool Budgeting

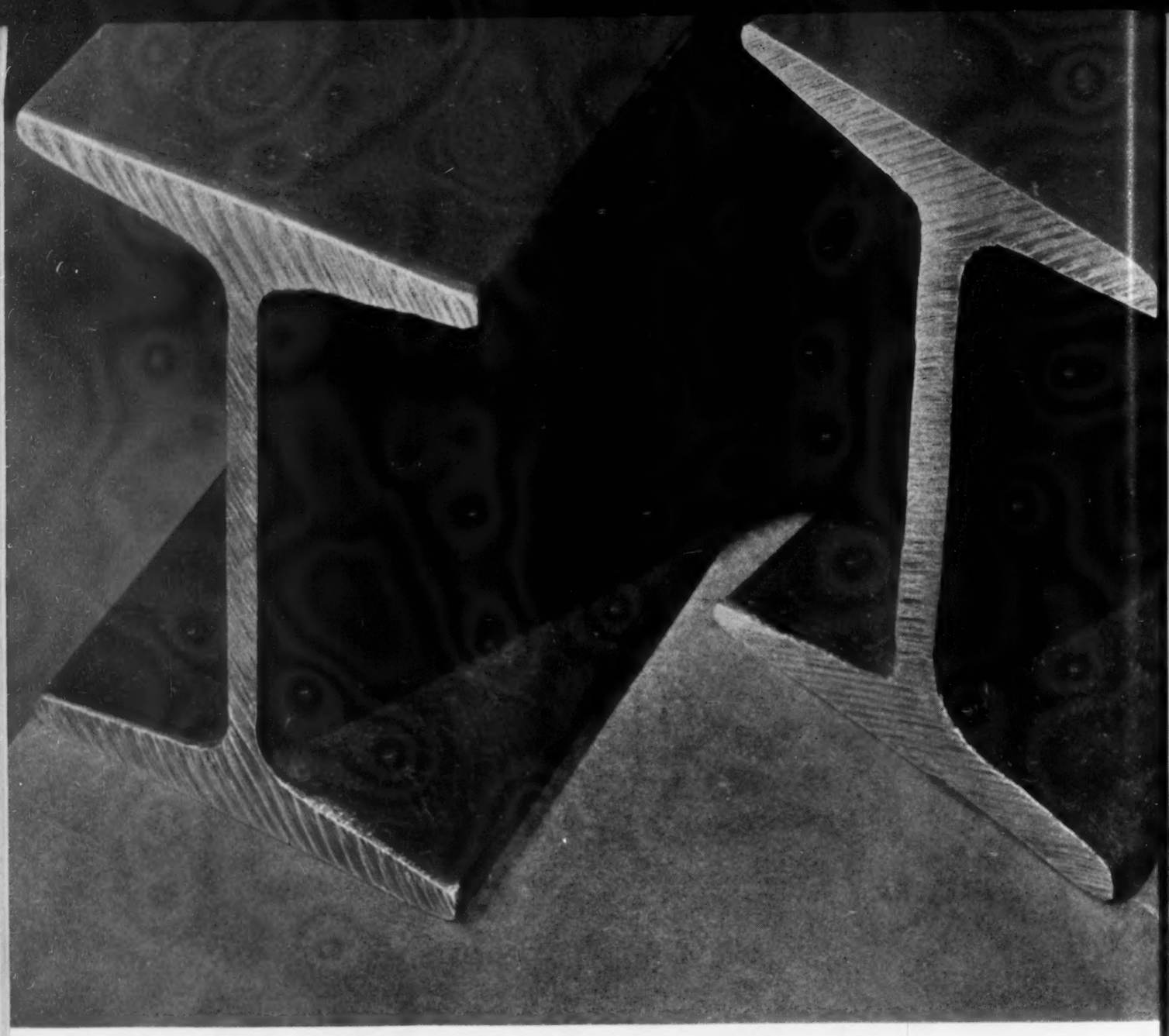
This week's contributor to STEEL's Forum on Re-Employment (p. 38) is August H. Tuechter, president, Cincinnati Bickford Tool Co. He is deeply concerned with extremes of unevenness of employment in the machine tool industry. He suggests a co-operative policy, based on unselfishness, by which the industry might improve this condition materially. A further help, he holds, would be the wider adoption of the buying budget systems which a few machine tool users now are employing advantageously. . . . Newly developed apparatus (p. 40) simplifies the problem of plant housekeeping; it permits better and safer working conditions and in some cases increases production. . . . Bridging the gap between bright and gray nickel deposits (p. 43) is a new semi-bright, soft, nickel alloy electroplate.

• • •

Increases Capacity

Capacity of a stamping trimmer and forming machine (p. 43) has been stepped up by changeover to photoelectric relay control. . . . Due to repeat cycles, equipment at a wire rope plant (p. 44) is laid out in a circle. This arrangement provides for shortest distance between processing points and results in maximum efficiency. . . . New flux makes it possible (p. 50) to braze galvanized pipe together without damage to galvanized surfaces. . . . Special equipment at Inland Steel Co.'s galvanizing department (p. 52) has resulted in larger output and improved quality of work. . . . New spray grill floor featured by downdraft for removing fumes (p. 57) makes it unnecessary to screen off the sprayers. . . . A cycle manufacturer (p. 59) now makes frames out of flat leaf spring steel.

E C Kreutzberg



Saving Weight and Fabrication Costs

THE many uses of structural steel in equipment as well as in building construction offer numerous opportunities for the services of the Inland engineer to prove of real value.

Weight often can be reduced without sacrifice of structural strength. Ease of handling and appeal to the buyer's critical eye can often be "stepped up."

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SHEETS STRIP TIN PLATE BARS PLATES FLOOR PLATES STRUCTURALS PILING RAILS TRACK ACCESSORIES REINFORCING BARS

BUYERS APPROVE 1938 BASING POINT CHANGES

By W. G. GUDE
Associate Editor, STEEL

■ AFTER a year's experience with the revised basing point system, steel buyers are almost evenly divided between those who favor the present setup and those who either prefer the old one or have no preference between the two.

In response to a questionnaire by STEEL, 51 per cent of the replying buyers declared that in general they prefer the present basing point system to its predecessor. Only 13.3 per cent indicated opposition to the change, and the remaining 35.7 per cent expressed no choice.

On June 30, 1938, it will be recalled, many new basing points for the sale of steel products were established. In most instances base prices at these new points were placed on a parity with Pittsburgh quotations. At the same time, former differentials at the older basing points in relation to Pittsburgh base prices generally were removed.

In isolated cases the differential was merely reduced, but as a whole the action marked a long step toward substituting "Any Mill-Plus" for "Pittsburgh-Plus." While all mills were not established as basing points, the revised system embraced the majority of leading centers, and with the equalization of prices at the various mills the change tended to level the cost of steel delivered to consumers in widely scattered sections of the country.

STEEL'S questionnaire was intended to determine what advantages and disadvantages have accrued to buyers by these revisions; whether buying practices as regards the number of sources of supply have been

HOW CONSUMERS REPLIED TO QUESTIONNAIRE

In general, do you prefer the present basing point system to that in effect prior to a year ago?	YES	51.0%
	NO	13.3%
	No Preference	35.7%
Has your competitive position in your industry been affected favorably or unfavorably by the change in basing points?	Favorably	19.4%
	Unfavorably	13.3%
	No Influence	67.3%
Has the change tended to reduce the number of producers from whom you buy steel?	YES	10.2%
	NO	89.8%
Approximately how much per ton was the price of steel delivered at your plant reduced by the change in basing points?	Nothing	31.6%
	Don't Know	25.5%
	$0.20 to $6 a ton	42.9%
Do you believe the increased number of basing points to be partly responsible for weakness in steel prices the past year?	YES	22.5%
	NO	51.0%
	No Opinion	26.5%
From your standpoint would a further addition of basing points be desirable?	YES	17.3%
	NO	71.5%
	No Opinion	11.2%

altered; to what extent the delivered price of steel has been reduced; whether the multiplication of basing points has contributed to the instability of base prices; and whether the setting up of additional basing points would be desirable.

These questions were directed to representative steel users in principal industrial areas of the United States. Results of the survey are shown in the accompanying table.

Analyzing replies to the questionnaire reveals the effect of basing point changes on the buyer's competitive position in his industry is the important consideration in deciding his preference or dislike for the revisions made last summer.

For instance, practically all those who favor the present system report these changes had either a favorable effect on their competitive position or were without influence. Likewise, 99 per cent of those who expressed no choice between the old system and the present one indicate the transition neither helped nor harmed them with respect to their competitors.

On the other hand, the consumers who disapprove the change in basing points generally report their competitive position weakened thereby. Nearly 80 per cent of the group note this condition, 15 per cent find no change and only 5 per cent experienced a favorable influence. This "disapproval" group is not confined to any one geographical area, but its protests arise from a common cause—one or more competitors in another locality have been enabled by the basing point change to effect a greater reduction in cost of steel than have the protesting companies.

Considering buyers as a whole, 66 per cent are unable to attribute to the basing point enlargement a change in their competitive position. Of the remainder, those noting a turn for the better slightly outnumber those whose status has been impaired.

Smaller Selling Areas

Establishment of additional basing points with identical base prices tended to contract the area from which a mill could seek business—unless it was willing to absorb an increased amount of freight charges when soliciting orders far afield. However, at the time present schedules were placed in effect it was pointed out producers would be loath to abandon sizable accounts in distant markets, particularly during periods when tonnage to be derived from nearby customers was insufficient to fill order books.

This latter observation seems to be borne out in replies to the questionnaire. Only 10.2 per cent of those replying state they are buying from fewer mills today than they were before the equalization of base prices.

Nearly one-third of all buyers reported no benefit in the form of lower delivered prices as a result of the basing point system changes. Another 25.5 per cent indicated they did not know the extent of the saving, although in the majority of these cases it is probable there was some reduction, judging by the location of the companies in question.

Reductions in delivered prices of steel through revamping of the basing point system varied widely. Reporting companies noted an average saving of $1 to $2 a ton, although in a number of instances there were reductions ranging from $3 a ton upward to eastern and southern buyers. As might be expected, only 10 per cent of those buyers indicating approval of the basing point changes state their steel costs were not reduced.

Price Adjustments Minor

Sixty per cent of the "no preference" group report they received no reduction in delivered prices, probably an important reason why the revision in the system has received neither their approval nor opposition. Another factor is that a large number of companies in this classification are manufacturers whose steel costs represent a relatively small part of their total costs. Minor revisions in prices, consequently, are of little concern to them.

A rather surprisingly large number of buyers attribute recent weakness in steel prices to the basing point changes made a year ago. Only 51 per cent state definitely that price cutting has not been caused by this circumstance. "Weakness in steel prices is traceable to slow business conditions, rather than to changes in basing points," was the opinion of one consumer, a view seconded by a number of others.

However, 22.5 per cent of the replies charge the basing point revisions with at least partial responsibility for the wave of price concessions that have gripped the industry within recent months. The remaining 26.5 per cent are undecided as to whether or not this is true.

The large majority of buyers oppose the setting up of more basing points. Only 17.3 per cent favor additional basing points, 11.2 per cent have no choice and 71.5 per cent are against the proposal. The last-named group includes all those who express disapproval in general of the basing point changes made in 1938.

One company minimizes the importance of basing points with the following: "What difference do basing points make anyway? All companies quote us the same price. They all are after business at the same price."

One steel user wants each mill made a basing point. His desire apparently is based on the misconception that the Birmingham base on plates and shapes still is higher than that at Chicago or Pittsburgh. Changes made a year ago brought official quotations at these three points to a parity.

In a somewhat similar vein, a southern buyer who admits he should be satisfied in obtaining the same base price at Birmingham as that prevailing at Pittsburgh points out "it is a well-known fact that steel can be produced more economically in the Birmingham district than anywhere else in the United States."

Objection to the quoting of delivered prices based on an all-rail rate, instead of f.o.b. mill, is voiced by one manufacturer who is able to make use of river barge transportation. Claiming a substantial saving in freight charges when water movement is employed, this company feels it should be allowed to make this saving over the all-rail rate.

Several buyers commented on steel prices. One declared prices should be increased in the interest of profits. Another injects this apt remark: "Prices obviously are fixed by the sales managers and should be based on costs. We don't cut prices when production is down and costs are up."

Boston Conference on Distribution in October

■ Eleventh Boston Conference on Distribution has been scheduled for Oct. 2-3 at Hotel Statler, Boston. A national forum on problems of distribution, the conference is sponsored by the retail trade board, Boston chamber of commerce, in co-operation with Harvard university graduate school of business administration, Boston university college of business administration, Massachusetts Institute of Technology, and other organizations.

Among the speakers who will discuss science, invention, sales, advertising, business and finance, will be Dr. Charles F. Kettering, president, General Motors Research Corp., Detroit; and Dr. O. M. W. Sprague, professor of banking and finance, Harvard graduate school of business administration, Cambridge, Mass.

■ Larchar-Horton Co., Providence, R. I., a co-partnership, has been dissolved, and assets purchased by Elmer S. Horton, Frederick C. Noyes and Raymond C. R. Noren, all of whom have been associated with Larchar-Horton. They will continue the business as Horton-Noyes Co.

Assert Nation Lacks Equipment, Skill for 1929 Standard of Living

■ TO PROVIDE even the standard of living of 1929, we have neither the mechanical equipment in place nor the skilled labor supply necessary. This is a conclusion by Allen W. Rucker and N. W. Pickering, business economists, in an analysis of the theory of technological unemployment. Analysis has just been published in booklet form by Farrel-Birmingham Co. Inc., Ansonia, Conn., under the title *Machinery's Part in Future Social Progress.*

Mr. Pickering, president of Farrel-Birmingham, was author of an article on the current state of capital goods industries which appeared in the Forum on Re-Employment, STEEL, March 6, page 46.

"There is," say the authors, "always sufficient shifting and displacement of labor due to technological change to lend some color to the theory of machine-caused unemployment, it is natural for individuals affected to conclude from their limited observations that the machine causes economic unemployment.

Displacement Counter-Balanced

"Actually, displacement of labor at the point of machine use is more than counter-balanced by the addition of labor at the point of machine construction, transportation, installation, maintenance and replacement, as well as at the point of production of added buildings and power necessary. Thus the percentage of population employed continues to rise and would rise faster were restrictions upon industry removed or modified."

The authors point out that in 1880 only 5.46 per cent of the population was employed in manufacturing. Had that percentage prevailed in 1937, employment would have been less than it was by 1,560,000 jobs.

Listing nine fallacies in the reasoning of the advocates of technological restriction, Mr. Rucker and Mr. Pickering emphasize that in reality upwards of eight to ten man-years of labor in machine construction are required to provide a production tool for one man—and it is rare that the labor saved in production exceeds the labor expended in machine construction in a shorter space than two to three years. The authors reason that the production of machinery is constantly creating a net increase in employment rather than a net reduction and the rising percentage of total population employed bears out that conclusion.

This report on machinery's economic contribution emphasizes certain fundamental desires of the American people which have definite bearing on the future of mechanization. Say the authors:

"Deeply rooted in the national character are certain basic concepts which mark us as pioneers in the progress of civilization. These are, in broad terms:

"That it is right and desirable to have and rear children and that the national population should increase.

"That it is right and desirable that the standard of living be steadily improved, and hence that the national income should be continuously enlarged at a more rapid rate than the growth of population;

"That it is right and desirable that social gains should be made in the elimination of child-labor, in the broadening of education, in the increase of time free from toil for cultural improvement and in relief of labor from arduous, hazardous and emotionally unsatisfactory occupation.

"From the standpoint of these fundamental concepts we are sadly undermechanized. We are unable to maintain our rate of population growth while improving the standard of living and enlarging social gains. For the want of adequate mechanization and a sounder philosophy of political economy, we are compelled to sacrifice population growth and the standard of living for social gains at one time, and, at another, to yield something from population growth and social gain for the sake of the standard of living.

"At no period in our history have we succeeded in a balanced advance in all three respects. We have not made anything like the technological advances necessary to that end. If we are to do so, we must correct not only a reactionary politico-economic philosophy but achieve also a new degree of mechanization as yet scarcely visioned."

J. & L. Completes Barge Terminal at Madison, Ind.

■ Jones & Laughlin Steel Corp., Pittsburgh, has just completed a new terminal on the Ohio river at Madison, Ind. Steel from Pittsburgh plant will be barged to this terminal, transferred to trucks and delivered to Inland manufacturing plants. The first load of 500 tons of steel was consigned to a Muncie, Ind., plant, indicating service to a large part of the Chicago metalwork district may be more economical by this route.

It is understood the terminal, if successful, will be expanded to a complete rail-river-truck setup for service to a wide area. This development is interpreted as one answer to the unfavorable position inherited by Jones & Laughlin as a result of basing point differential eliminations, since the company has no plants outside Pennsylvania.

Defying Convention for Safety's Sake

■ **Safety is increased by reversing conventional construction in this oil-burning steam locomotive, one of 28 being built for Southern Pacific railroad in Baldwin Locomotive's Eddystone, Pa., works. With enclosed cab foremost, and tender and cars attached to what ordinarily would be its front, locomotive affords engineers greater visibility and protection from smoke and fumes**

MEETINGS

REFRACTORIES GROUP PLANS SESSIONS IN SEPTEMBER

■ REFRACTORIES division, American Ceramic society, will conduct its fall meeting Sept. 8-9 at Oakland Beach hotel, Conneaut Lake, Pa. The program will cover special refractories chiefly. The first session on the morning of Sept. 8 will be devoted to applications in the nonferrous industry, and the second session on the morning of Sept. 9 to applications in the steel industry. The majority of papers will come from the consumer group. Committee C-8 on refractories of the American Society for Testing Materials is meeting previously, will remain for the sessions.

GOVERNMENT REFORMS TOPIC FOR METAL MINING MEETING

The Wagner labor relations act, the wage-hour act, tax problems, mine financing and security registrations, tariff developments, monetary legislation, minerals and the part they play in the national defense program, occupational disease legislation, and the outlook for minerals, and mine operating practice, will share attention at the sixth metal mining convention of the American Mining congress in Salt Lake City, Utah, Aug. 28-31. Over 100 manufacturers will display metal mining equipment and supplies in an exposition during the meeting.

Among addresses scheduled to review the current status and future outlook for metals are the following: "Copper," by P. G. Beckett, vice president, Phelps Dodge Corp., Douglas, Ariz.; "Lead," by Andrew Fletcher, vice president and treasurer, St. Joseph Lead Co., New York; "Zinc," by E. H. Snyder, general manager, Combined Metals Reduction Co., Stockton, Utah; and "Iron Ore," by R. C. Allen, executive vice president, Oglebay, Norton & Co., Cleveland, and president, Lake Superior Iron Ore association.

Senator Burton K. Wheeler of Montana, and D. C. Jackling, president, Utah Copper Co. and Nevada Consolidated Copper Co., San Francisco, will address the annual banquet of the Western division, American Mining congress, Aug. 31.

NATIONAL SAFETY CONGRESS IS SET FOR ATLANTIC CITY

Atlantic City has been selected by the National Safety council for its twenty-eighth annual National Safety congress and exposition. The dates are Oct. 16-20. William H. Cameron, 20 North Wacker drive, Chicago, is managing director of the council.

COMPLETE PROGRAM FOR COAL CONFERENCE IN COLUMBUS

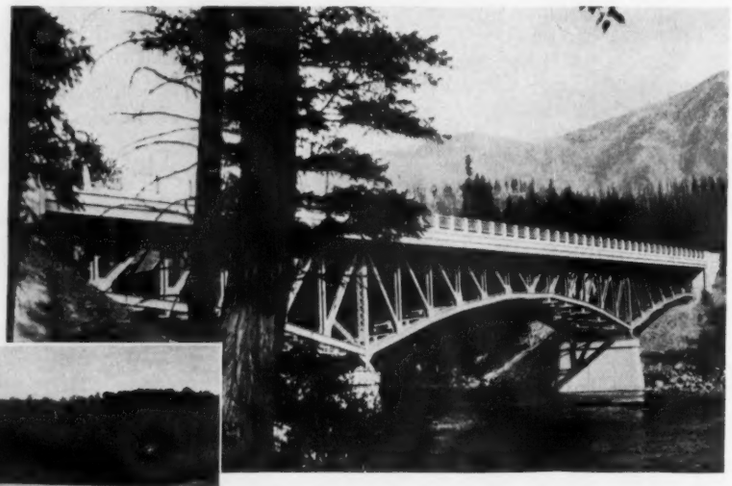
Coal utilization will be the central topic of the third annual joint meeting of the Fuels division, American Society of Mechanical Engineers, and Coal division, American Institute of Mining and Metallurgical Engineers, at the Deshler-Wallick hotel, Columbus, O., Oct. 5-7.

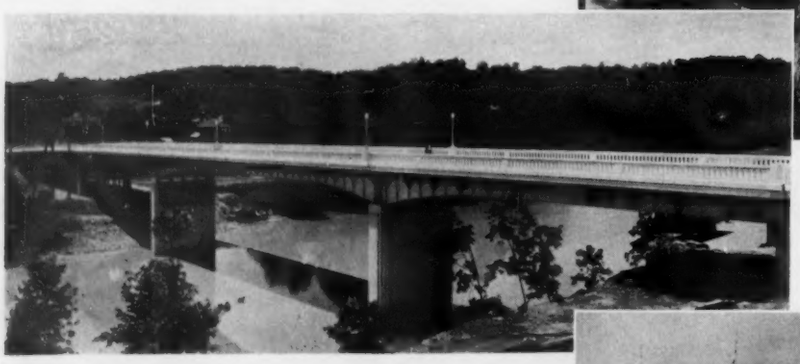
One session is to be devoted to utilization characteristics of coal as related to mining methods, with separate consideration of underground and strip mining. Coal utilization in steam generation will be discussed in a second session. Future design of coal-burning locomotives and advances in coal-burning equipment in ships on the Great Lakes will be considered in a third symposium. Concluding technical session will feature papers on firing open-hearth steel furnaces with pulverized coal, viscosity of coal-ash slags, and photography in boiler furnaces.

An address on relation of the bituminous coal and manufactured gas industries is planned for a luncheon session. Visits to the Jeffrey Mfg. Co., and Battelle Memorial institute will occupy morning of Oct. 7.

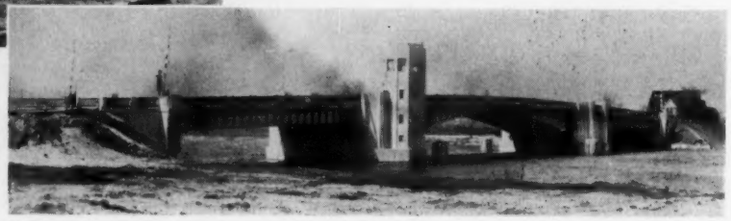
Three Winners in Contest of Beautiful Bridges

■ Each year American Institute of Steel Construction, New York, conducts a contest to determine the most beautiful bridges built in the preceding 12-month period. Middletown-Portland bridge, Middletown, Conn., winner for 1938 in the monumental class, was presented in STEEL, June 26, p. 23. At right is winner in the small class, bridge over middle fork of Flathead river, Bolton, Mont., costing $74,815, fabricated by Pittsburgh-Des Moines Steel Co., Pittsburgh





Left, Capital bridge over Kentucky river at Frankfort, Ky., winner in the medium class. Cost, $329,316; fabricated by Bethlehem Steel Co., Bethlehem, Pa.



Right, Lafayette bridge across east channel Saginaw river at Bay City, Mich., awarded first place in the movable class. Fabricated by R. C. Mahon Co., Detroit; cost, $380,000

House Orders Probe of NLRB

WASHINGTON

■ HOUSE last week in response to "tremendous nationwide pressure" ordered a sweeping investigation of the national labor relations board. Resolution authorizes the speaker to appoint a five-man committee with instructions to:

Determine whether the board has been fair in its interpretations of the Wagner labor act and in its decisions.

Check the effects of the act on employer-employe relations and upon economic conditions.

Ascertain whether the board has "attempted to write into the act" purposes not justified by its language.

Suggest any necessary amendments and determine whether congress should further define interstate commerce.

Adoption came in face of strong opposition from administration leaders and members of the house labor committee, who urged action be deferred until that group could conclude its study of proposed amendments to the Wagner act. Hearings in the committee, however, have been dragging interminably, and its recommendations for labor act changes are not yet in sight.

Leading a determined group of Republicans and insurgent Democrats in the fight for an immediate inquiry, Representative Smith, Virginia, asserted "there would not be tremendous pressure throughout the country for an investigation unless something is wrong that needs looking into. I feel a good work can be done for labor, industry and the government if this matter is looked into calmly."

Roll call vote for the resolution was 252 to 135. According to house precedent, Representative Smith, as author of the resolution, will probably be named head of the investigating committee.

WISCONSIN LABOR BOARD FINDS CIO UNION "UNFAIR"

First test of Wisconsin's recently enacted "employment peace act" arose last week as striking CIO unionists defied the state labor relations board's ban against mass picketing of Allen-Bradley Co.'s Milwaukee plant.

United Electrical, Radio and Machine Workers' local called a strike May 11, sought to prevent 500 factory workers and the office employes from going to work. Chief demand was for some form of preferential shop. Violence continued throughout settlement negotiations carried on by state and federal conciliators.

Under provisions of the new law (STEEL, May 15, p. 24), board held hearings. Finding strikers guilty of unfair labor practices charged by the company, it ordered the union to: Cease mass picketing, limiting pickets to 15 at any one time; desist from intimidating nonstrikers.

Asserting it is subject only to the national labor relations act and that the state act is unconstitutional, union filed a petition before the federal court in Madison, Wis., for an injunction preventing the board from exercising jurisdiction. Mass picketing continues pending the court hearing July 25. Representatives of 70 other CIO locals in Wisconsin met last week, pledged $10,000 to support the strike.

Company spokesmen declare operations have not been halted, that half the production force, all office employes, are at work.

Eastern Group Organizes Advertising Council

■ Industrial Advertising and Marketing council was organized recently in Hartford, Conn., by a group of Connecticut and Massachusetts advertising and marketing men.

Organization was completed at a second meeting in Waterbury,

E. V. Creagh

Conn., where the following officers were elected: President, E. V. Creagh, sales promotion manager, American Chain & Cable Co. Inc., Bridgeport, Conn.; first vice president, A. W. Tucker, Henry G. Thompson & Son Co., New Haven, Conn.; second vice president, C. H. Winslow, Cuno Engineering Corp., Meriden, Conn.; and secretary-treasurer, Galen Snow, Snow, Bates & Orme Inc., Springfield, Mass.

At the next meeting, to be held in Waterbury Sept. 14, plans will be formulated for application to the National Industrial Advertisers' association for a charter.

Steel's Accident Rate Reduced

■ ACCIDENTS in the steel industry last year decreased 21 per cent in frequency and 14 per cent in severity from 1937, according to the National Safety council, Chicago. The frequency rate is considerably below the all-industries average, the severity rate higher.

Since 1926 steel companies have reduced accident frequency 69 per cent and severity 29 per cent. During 1938 injury rates were 6.56 for frequency (number of disabling injuries per 1,000,000 man-hours of exposure) and 1.84 for severity (number of days lost as result of disabling injuries per 1000 man-hours of exposure).

Corresponding averages for all industries were 12.18 and 1.53.

Small steel plants had the lowest 1938 accident severity rates, while large plants had the best frequency records. The small organizations, however, achieved the greatest reductions, bringing down each rate approximately 25 per cent.

Council's survey is based on reports from 130 plants whose employes worked 497,297,000 man-hours in 1938.

Republic Steel Corp.'s Corrigan-McKinney works in Cleveland continues to hold the best known all-time no-injury record in the industry, with 5,326,144 man-hours. Next best is Weirton Steel Co.'s Clarksburg, W. Va., plant, 3,338,790.

Honor roll for outstanding safety achievements during 1938 as listed by the council:

Large Units

United States Steel Corp. National Tube Co.'s National works, McKeesport, Pa., lowest frequency rate—1.85.

Great Lakes Steel Corp.'s Michigan works, Detroit, lowest severity rate—0.37.

International Harvester Co.'s Wisconsin works, South Chicago, Ill., largest reductions since 1936 in both rates—78 per cent for severity and 43 per cent for frequency.

Middle-size Units

United States Steel Corp. American Steel & Wire Co.'s South works, Worcester, Mass., lowest frequency rate—1.08.

Hanna Furnace Corp., Detroit, lowest severity rate—0.11.

Union Carbide Co. Electro Metallurgical Co., Glen Farris, W. Va., largest reductions since 1936 in both rates—99 per cent in severity and 80 per cent in frequency.

Small Units

American Rolling Mill Corp.'s Zanesville, O., plant worked more hours without a disabling injury than any other small unit with a perfect record—940,000.

United States Steel Corp. Columbia Steel Corp.'s Pacific works, San Francisco, achieved a perfect 1938 record, thereby reducing both injury rates 100 per cent since 1936.

FINANCIAL

REPUBLIC'S PROFIT UP IN SECOND QUARTER

■ CONSOLIDATED second quarter net profit of Republic Steel Corp., Cleveland, totaled $550,412. This is a slightly better showing than recorded in the initial period when net profit was placed at $532,899. In the June quarter last year a net loss of $2,856,317 was reported. Republic's earnings for the first half aggregated $1,083,311, compared with a net loss of $5,918,881 in the corresponding 1938 period.

•

Sharon Steel Corp., Sharon, Pa., had a second quarter net loss of $148,157, against net loss of $192,006 in the June, 1938, quarter. In the initial period this year a net profit of $7613 was reported. In the six months ended June 30, indicated net loss was $140,544, comparing with a net loss of $343,915 in the first half of 1938.

•

Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., reports a net profit of $343,592, or $1.71 a common share, in the first half. This compares with a net profit of $344,437, equivalent to $1.64 a share, in the comparable 1938 period.

•

Interlake Iron Corp., Chicago, reports second quarter net loss of $442,574, against net loss of $294,587 in June, 1938, period and net loss of $350,678 in the three months ended March 31, 1939. Six months' net loss totaled $793,252, compared with net loss of $266,321 in corresponding 1938 period.

•

A. M. Castle Co., Chicago, has second quarter net profit of $45,083, equal to 19 cents a share, against $35,880, or 15 cents a share, in the March quarter and $58,995, or 25 cents a share, in the June quarter last year. Six months net was $80,964, compared with $125,133 in the comparable 1938 period.

•

Fansteel Metallurgical Corp., Chicago, reports net income of $100,177 for the six months ended June 30. This is equal to 41 cents a common share, and compares with a net loss from operations of $11,518 in the corresponding 1938 period. In the first half this year net sales increased 85.5 per cent over the first six months of 1938.

•

Cleveland-Cliffs Iron Co., Cleveland, will disburse $1 a share on $5 preferred stock on July 31 to stock of record July 25. Accumulated dividends totaled $29.41 a share April 1, 1939. Reported net profit for the first half was $173.679 compared with net loss of $123,183 in same period last year. Earnings of Cliffs Corp., holding company, for the first six months amounted to $86,948, against net profit of $127,195 in first half 1938. No dividend action was taken, although disbursement of 10 cents a share was made in April.

•

Acme Steel Co., Chicago, reports second quarter net profit of $259,969, equal to 79 cents a share. This compares with net profit of $339,672, or $1.04 a share in the initial period, and $62,170 net profit, or 19 cents a share in June quarter last year. Six months net profit totaled $559,641, or $1.83 a share, against net profit of $63,139, or 19 cents a share in the comparable 1938 period.

•

Reflecting improved earnings during April, May and June, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., allots this month to its employes under its plan of adjusted compensation, a bonus of 10 per cent. This compares with 7 per cent in June and 5 per cent in May. Indicated net profit for the June quarter was $3,982,635, against net profit of $2,469,372 in the second quarter last year and $2,356,150 net in three months ended March 31.

STEEL Index Is Ready

The index to Volume 104, STEEL, *for the first six months of* 1939, *now is ready for distribution. Copies will be sent to all subscribers requesting them.*

DIVIDENDS DECLARED

Burroughs Adding Machine Co., Detroit, 10 cents a share on capital stock, payable Sept. 5 to record July 29. Like amount was paid on June 5.

Minneapolis-Honeywell Regulator Co., Minneapolis, 50 cents a share on common, payable Aug. 19 to record Aug. 4. Like amount was paid May 20. The company also declared regular quarterly dividend of $1 a share on 4 per cent preferred, series B, payable Sept. 1 to record Aug. 21.

Signode Steel Strapping Co., Chicago, 25 cents a share on common, plus 62½ cents a share on preferred, both payable Aug. 4 to record July 31. Similar payment on common was disbursed at the close of last year.

Average Earnings of Fabricators, Suppliers Up 85.5%

■ NET earnings of 35 fabricators and suppliers in the first half of 1939 averaged 85.5 per cent higher than in the corresponding 1938 period. From those quarterly figures available it is evident that the June, 1939, quarter showing among individual companies was substantially better than in 1938, although in some instances the second quarter earnings fell below the net profit reported in the March quarter this year. All figures are profits except where asterisk denotes loss.

	Second Quarter 1939	Second Quarter 1938	First Half 1939	First Half 1938
American Brake Shoe & Fdry. Co., N. Y.	$510,997	$254,728	$919,934	$485,214
Caterpillar Tractor Co., Peoria, Ill	.....	.....	2,315,380	1,132,614
Carrier Corp., Syracuse, N. Y.	.....	.....	$137,742	332,697*
Central Foundry Co., New York	43,864	101,261*	11,137	179,067*
City Auto Stamping Co., Toledo, O.	162,365	20,683	128,953	16,497
Container Corp. of America, Chicago	8,049	67,052*	32,249	120,251*
Cleveland-Cliffs Iron Co., Cleveland	302,474	52,713*	173,679	123,183*
Cliffs Corp., Cleveland	41,420	34,111	86,948	127,195
Cutler-Hammer Inc., Milwaukee	186,711	41,343*	234,413	75,760*
Eaton Mfg. Co., Cleveland	559,692	151,292*	1,285,691	350,334*
Florence Stove Co., Gardner, Mass.	241,903	90,261	348,236	137,631
Glenn L. Martin Co., Baltimore	285,127	744,037	967,624	1,372,600
General Electric Co., Schenectady, N. Y.	8,996,761	6,101,217	16,370,192	13,176,956
Gardner-Denver Co., Quincy, Ill.	175,817	5,477	392,587	66,833
Houdaille-Hershey Corp., Detroit	356,871	143,004	764,010	172,333
Hein-Werner Motor Parts Co., Waukesha, Wis.	.....	.....	76,653	50,558
Hoskins Mfg. Co., Detroit	104,607	58,201	202,587	115,429
Johns-Manville Corp., New York	1,078,626	214,578	1,203,744	24,897*
Kingston Products Corp., Detroit	17,431*	80,277*	46,230	165,691*
Marion Steam Shovel Co., Marion, O.	43,837*	174,453*	76,532*	280,568*
Master Electric Co., Dayton, O.	146,186	86,990	240,467	139,795
Monarch Machine Tool Co., Sidney, O.	.....	.....	173,783	157,991
Motor Products Corp., Detroit	16,450	45,360	83,411	83,222
National Cash Register Co., Baltimore	704,344	866,892	1,188,369	1,475,088
National Malleable & Steel Castings Co., Cleveland	32,169	442,580*	318,498	861,318*
New York Air Brake Co., New York	108,488	128,004*	216,291	220,272*
Square D Co., Detroit	187,781	50,587	308,381	116,328
Signode Steel Strapping Co., Chicago	90,758	12,866	178,357	7,902
Twin Coach Co., Kent, O.	291,686	39,247	347,671	60,636
Thompson Products Inc., Cleveland	325,156	205,590	646,055	112,098
Transue & Williams Steel Forging Corp., Alliance, O.	9,367*	61,917*	524*	130,136*
Truscon Steel Co., Youngstown, O.	143,531	204,130*	163,949	599,274*
United States Pipe & Foundry Co., Burlington, N. J.	.....	.....	1,434,916	778,294
Underwood-Elliott-Fisher Co., New York	300,756	371,503	860,919	928,943
Wolverine Tube Co., Detroit	.....	.....	175,098	15,185*

Activities of Steel Users, Makers

■ SPENCE Engineering Co. Inc., New York, manufacturer of pressure and temperature regulators, has purchased the plant and business of the Rider-Ericsson Engine Corp., Walden, N. Y. It will continue to furnish repair parts for the Rider-Ericsson hot air engines and Reeco pumps, but the plant proper will be devoted to the manufacture of Spence regulators.

♦

Bristol Brass Corp., Bristol, Conn., has joined the Copper and Brass Research association, New York.

♦

Ajax Flexible Coupling Co., Westfield, N. Y., has appointed Urquhart Service Co., Denver, Colo., and Salt Lake City, Utah, its sales representative.

♦

Hasler-Tel Co., New York, maker of precision instruments, recently moved from 461 Eighth avenue to larger quarters in the Underwood building, 30 Vesey street.

♦

Metallizing Co. of America Inc., Los Angeles, has established a sales and service office at 602 Academy building, Newark, N. J., with William McMakin in charge.

♦

J. J. O'Connor and associates, Gulf building, Pittsburgh, have been named Pittsburgh district sales representatives for the ingot brass and bronze products of George Birkenstein Corp., Chicago, covering western Pennsylvania, West Virginia and sections of eastern Ohio.

♦

Parkersburg Rig & Reel Co., Parkersburg, W. Va., manufacturer of oil well equipment, has opened a branch in St. Louis to distribute its products in Missouri, Illinois, Indiana, Kentucky and Michigan. E. Lloyd Beyer is in charge, with headquarters in the Missouri Pacific building.

♦

Porcelain Enamel & Mfg. Co., Baltimore, has installed two complete continuous grinding plants for preparing premilled enamels, each unit with capacity up to one carload a day. The first plant went into operation July 10 and the other is scheduled for Aug. 7. A small laboratory unit, an exact duplicate of the larger grinding units, is being erected for experimental purposes.

District Steel Rates

Percentage of Ingot Capacity Engaged In Leading Districts

	Week ended July 22	Change	Same week 1938	Same week 1937
Pittsburgh ...	48	+ 4	27	83
Chicago	53.5	+ 3.5	34	84
Eastern Pa. ..	41	+ 1	28	70
Youngstown ..	53	None	35	78
Wheeling	79	None	51	92
Cleveland	56	+13	26	51
Buffalo	46.5	+ 9.5	35	88
Birmingham ..	81	+ 1	50	96
New England..	40	None	40	90
Cincinnati	31	+10	50	93
St. Louis	47.5	+ 2.5	18	93
Detroit	64	None	29	95
Average....	56.5	+ 6	36	81

Republic Building Ore Concentration Plant

■ Construction of an iron ore concentration plant is being started in Port Henry, N. Y., by Republic Steel Corp., Cleveland. The plant will operate in conjunction with Republic ore mines in the district.

Replacing an old mill, the new plant will use modern methods and equipment to produce high-grade ore. Scheduled for completion in four to five months, it is to have annual capacity of 500,000 tons, may be expanded to 1,000,000 tons.

Chain Belt Shareholders Approve Merger Plan

■ Stockholders of the Chain Belt Co., Milwaukee, have approved the proposed acquisition of Baldwin-Duckworth Chain Corp., Springfield, Mass. No cash is involved, Chain Belt acquiring the business and net assets of Baldwin-Duckworth by issuing the latter 139,537 shares of its stock.

With little duplication in products of the two concerns, merger will give Chain Belt improved distribution and service facilities in the East.

Employes Raise $175,000 To Aid Foundry

■ Three hundred employes of the Enterprise Foundry Co., Belleville, Ill., have agreed to raise $175,000 working capital for the firm in return for assurances it will continue operating its Belleville plant for at least ten years and will make no wage reductions during that period.

Manufacturer of stoves, Enterprise will give to employes interest-bearing bonds maturing in five to ten years, secured by a mortgage on the factory. Funds will be used in developing new business.

PRODUCTION

■ STEELWORKS operations last week advanced 6 points to 56.5 per cent, equaling the highest point this year, in mid-March. Eight districts showed increases and four were unchanged. Last year the rate was 36 per cent; two years ago 81 per cent.

Youngstown, O.—Remained at 53 per cent with 45 open hearths and three bessemers in operation. Schedules for this week indicate no change.

Detroit—Steady at 64 per cent with expectation of the same rate through July.

Chicago—Advanced 3.5 points to 53.5 per cent, the highest rate in seven weeks, and near the high for the year. One interest is at capacity and another slightly under.

Birmingham, Ala.—Up 1 point to 81 per cent as one open hearth was added at midweek, making rate 82 per cent. Schedule for another open hearth this week indicates 84 per cent.

New England—Unchanged at 40 per cent with the same schedule for this week.

Pittsburgh—Increase of 4 points to 48 per cent with approximately the same rate this week.

Wheeling—Continues at 79 per cent with probability of no change this week.

Buffalo—Gain of 9.5 points to 46.5 per cent, the highest since December. All three producers increased production.

Central eastern seaboard—Slight upward revision carried the rate up 1 point to 41 per cent.

St. Louis—Increased 2.5 points to 47.5 per cent on higher operations by one producer.

Cleveland—Spurted 13 points to 56 per cent as all interests expanded output. Another increase is scheduled this week.

Cincinnati—Rebounded 10 points to 31 per cent. Little further change is expected this month.

Foundry Equipment Orders Higher in June

■ Foundry equipment orders and shipments increased in June, while unfilled orders declined, according to the Foundry Equipment Manufacturers' association, Cleveland. Comparisons follow, indexes based on 1922-24.

	June 1939	May 1939	June 1938
Net orders	134.6	108.6	61.2
Shipments	148.5	144.3	78.5
Unfilled orders.....	159.2	173.1	140.2
3 mos. av. gross orders	130.0	133.9	77.3

MEN OF INDUSTRY

■ GEORGE E. CLIFFORD has been elected vice president in charge of sales, Spang, Chalfant Inc., Pittsburgh, effective Aug. 1. A native of Pittsburgh, Mr. Clifford attended the Edgewood public schools and received his college training at the University of Pittsburgh. Mr. Clifford has been with the pipe division of Republic Steel Corp. since 1930, first in capacity of assistant manager of sales, and later as district sales manager of the Los Angeles office. He recently was placed in charge of the consolidated Los Angeles sales organizations of Union Drawn Steel division and Republic, STEEL, June 26, p. 21.

♦

C. E. Wilson, executive vice president, General Electric Co., Schenectady, N. Y., is now located at 570 Lexington avenue, New York.

♦

William B. Neal has resigned as vice president, Somerville Iron Works, Chicago. He had been affiliated with the company about 20 years.

♦

Harry Gard Knox has resigned as vice president in charge of engineering, Electric Research Products Inc., New York, a subsidiary of Western Electric Co. He will, however, be retained in a consulting capacity.

♦

N. A. Engler has been appointed district manager in the New York and New England territories for A. J. Lindemann & Hoverson Co., Milwaukee. Ray Sullivan has been named district manager in the Chicago metropolitan area.

♦

Donald W. Scott, research engineer, has joined the technical staff of Battelle Memorial institute, Columbus, O., and has been assigned to the concentration division. Theodore E. Pochapsky, a graduate of Ohio State university, has joined the institute's research staff.

♦

J. Q. Mecum has been appointed assistant works auditor of Gary, Ind., works, Carnegie-Illinois Steel Corp. He began his association with the corporation about a year ago in the methods and procedure department at Pittsburgh.

♦

Donald M. Simmons, chief engineer, General Cable Corp., New York, has been awarded an honorary degree of doctor of engineering by Princeton university, "in recognition of his achievements in the

George E. Clifford

electrical industry." A graduate of Princeton in 1911, Mr. Simmons has been associated with the electric cable industry more than 25 years.

♦

W. J. Chappell, advertising manager, Timken-Detroit Axle Co., Detroit, has been appointed leader of one of eleven advertising clinics to be conducted at the 1939 convention of the National Industrial Advertisers association in New York in September.

♦

C. E. Westover, Burnside Steel Foundry Co., Chicago, has been elected chairman, Chicago chapter, American Foundrymen's association, for the 1939-1940 season. Other officers are: Vice chairman, G. P. Phillips, International Harvester Co.; treasurer, C. C. Kawin, Charles C. Kawin Co.; secretary, L. L. Henkel, Interlake Iron Co. Directors are: L. H. Rudesill, Griffin Wheel Co., Chicago; J. H. Abbott, Hickman-Williams & Co.; L. F. Lottier, Peoples Gas, Light & Coke Co.; Bert Aamodt, National Malleable & Steel Castings Co., Cicero, Ill.; H. K. Briggs, Western Foundry Co.

J. Q. Mecum

♦

Guy W. Wilson, assistant manager, transportation department, General Electric Co., Schenectady, N. Y., has been named manager of that department. He succeeds E. P. Waller, who has been appointed assistant to E. O. Shreve, vice president in charge of apparatus sales.

♦

Charles H. Morse III, assistant general manager, Beloit, Wis., works of Fairbanks, Morse & Co., has resigned to assume active management of Inland Utilities Co., of which he is president. A. C. Howard continues as general manager of Beloit works.

♦

Bertram M. Ainsworth, well known sales and marketing expert, and J. Anthony Garrity, designer, have joined Designers for Industry Inc., New York. Mr. Ainsworth has been named merchandising counsel, and Mr. Garrity, designer for the organization's eastern division. Both will maintain headquarters in New York.

♦

Newton P. Armstrong has been appointed representative in New England, with headquarters in Boston, for Cowles Detergent Co., Cleveland, maker of industrial alkalies and soaps. Frederick H. Hitchcock has been named a representative for the company in Michigan, with headquarters in Detroit. E. W. Hutchinson, who has been representing Cowles in the Detroit area for a number of years, continues as heretofore.

♦

John Steencken has been appointed service representative for Porcelain Enamel & Mfg. Co., Baltimore, and Frederich Woltil has been made a member of the firm's laboratory staff. Mr. Steencken was formerly with Wolverine Porcelain Enameling Co., and Mr. Woltil was previously with Chicago Vitreous Enamel Co. Samuel L. Hudd, formerly factory manager, Detroit Vapor Stove Co., and the past several years an executive in the automotive industry, has joined the company as sales engineer in the Ohio-Indiana territory.

♦

Paul F. Zerkle, formerly Ohio district manager of Midwest Tool Co. and McCrosky Tool Corp., has been appointed vice president in charge of sales, National Tool Co., Cleveland. Mr. Zerkle, well known in the machine and cutting tool industry, started his apprenticeship in the

trade of toolmaking and designing under Walter P. Chrysler at the Buick Motor Co. 22 years ago. In 1922 he became general field engineer, Murchey Machine & Tool Co., Detroit, which post he held until 1927 when he became associated with McCrosky Tool Corp., Midwest Tool & Mfg. Co. and the Murchey company in their Cleveland office. Mr. Zerkle was one of the charter members of American Society of Tool Engineers, and past president of the Cleveland chapter.

DIED:

■ SNOWDEN SAMUEL, 45, president, Frank Samuel & Co. Inc., Philadelphia, July 16 in Bryn Mawr hospital, after several weeks illness. Except for period during World war, he had been continuously associated with the organization since 1912, first as an employe of American-Swedo Iron Co., Danville, Pa., a subsidiary. Mr. Samuel was secretary and treasurer of the American-Swedo firm from 1919 to 1923 when he was admitted to partnership in parent company. When Frank Samuel & Co. was incorporated in 1932 he became secretary and treasurer, and on death of his father, Frank Samuel, in 1934, he succeeded to the presidency. He was a member, American Iron and Steel institute, and was an organizer of Wrought Iron Research association, serving as secretary and treasurer, until it disbanded in 1931.

Snowden Samuel

♦

Calvert C. Canfield, 75, July 15 in Cleveland. Mr. Canfield retired in January, 1937, as manager, marine department, Pickands, Mather & Co., Cleveland, and assistant secretary and treasurer of Interlake Steamship Co.

♦

Charles Harold Munger, 83, retired general manager of Pickands, Mather & Co. mines in the Lake Superior district, July 13. He had been associated with Pickands, Mather since April, 1899.

♦

Charles C. Klingman, 55, in Cleveland, July 14. For many years he was office manager, Cleveland Wire Spring Co., Cleveland. He began his business career with American Steel & Wire Co. in 1903, and two years later joined the Cleveland Wire Spring Co.

♦

Charles Theiss, 51, foreman, galvanizing department, Superior Sheet Steel Co., Canton, O., July 9 at his home east of Louisville, O. He had been with the Superior company since its organization, and was a brother of Harry W. Theiss, vice president and general manager of the company.

♦

Wilfred R. Wood, 69, director and consultant to the president, Combustion Engineering Co. Inc., New York, July 14 in that city. Mr. Wood had been associated with the engineering firm and its affiliates over 40 years. An officer in several British companies, Mr. Wood lived in London from 1898 until 1929. He was the founder and managing director, Underfeed Stoker Co. Ltd., London.

Unemployment Reduced 2.9 Per Cent in May

■ Unemployment in the United States declined 2.9 per cent during May, falling below 10,000,000 for the first time this year, the National Industrial Conference board estimates. Jobless numbered 9,881,000, some 1,500,000 less than in May, 1938, but 4,000,000 more than during the third quarter of 1937, best point of the recovery period.

Total employment of 44,645,000 constituted a 1 per cent gain over April. Most pronounced advance was in mining, where labor forces increased 17 per cent over the previous month, due largely to settling of the bituminous coal strikes. The board points out, however, that the number at work in mines still is far below prestrike levels.

Construction suffered a 3.7 per cent decline in employment during May, largest for any industry, owing to slackness in nonresidential building and despite continuance of the upward trend in residential activity. Curtailment in auto production following strikes in automotive supply plants accounted for greater than seasonal reduction in manufacturing payrolls.

Pig Iron Off 49 Per Cent in 1938

■ PIG IRON production in 1938, exclusive of ferroalloys, was 18,582,322 gross tons, a 49 per cent decrease from 1937, according to the metals and minerals division, department of the interior. Of the total 18,543,391 tons were made with coke fuel and 38,931 tons with charcoal.

Pennsylvania was the leading producer with 26 per cent of the total; Ohio was second, the two accounting for 49 per cent of domestic output.

Production of this tonnage consumed 30,866,250 tons of domestic iron and manganiferous ores, 1,507,584 tons of foreign ores, 2,271,055 tons of mill cinder and roll scale, 300,578 tons of purchased scrap, 763,800 tons of home scrap and 951,000 tons of flue dust.

An average of 1.880 tons of metalliferous materials, exclusive of home scrap and flue dust, were consumed per ton of pig iron produced in 1938, compared with 1.870 tons in 1937. Average consumption of ore per ton of pig iron made was 1.742 tons in 1938, compared with 1.734 tons in 1937.

Shipments of pig iron from furnaces totaled 18,202,354 tons valued at $356,875,369 in 1938, a decrease of 48 per cent in quantity and 51 per cent in value from 1937. General average value of all grades of pig iron at furnaces in 1938 was $19.61 compared with $20.76 in 1937.

Pig iron exports decreased to 432,851 tons in 1938 from 782,436 tons in 1937. Japan and the United Kingdom together took 82 per cent of the total. Pig iron imports for consumption in 1938 totaled 30,400 tons, a decrease of 73 per cent.

Domestic ferroalloy production was 584,724 tons in 1938, a decrease of 42 per cent from 1937. Shipments of all classes of ferroalloys totaled 464,112 tons valued at $41,811,513, a decrease of 52 per cent in volume and 51 per cent in value.

Reynolds Awards Contract For Wire Plant Addition

■ Reynolds Wire Co. has awarded to the Austin Co., Cleveland, contract for constructing a 60-000-square foot addition to its Dixon, Ill., plant.

Providing manufacturing and storage space, the new unit will cost $175,000. It comprises three stories and basement of reinforced concrete, is to replace a frame building. A leading producer of wire screen cloth, Reynolds reports its business has been gaining steadily during recent months.

meet the WASHBURN WIRE FAMILY

Flat Cold Rolled Strip 6" and Narrower, Bright, Galvanized, Tinned and Cadmium Finish

Flat Tempered and Untempered Wires in .50 to 1.25 Carbon Range

Round Untempered Low and High Carbon Spring Wires

FAMOUS FOR HALF A CENTURY

WASHBURN WIRE CO., NEW YORK CITY

WASHBURN

CLEAN, UNIFORM BILLETS - STRIP - RECTANGULAR, ROUND, FLAT RODS, TEMPERED AND UNTEMPERED FLAT AND ROUND HIGH CARBON WIRES

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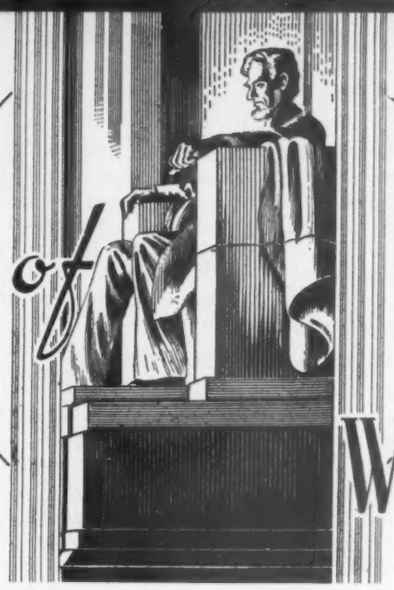


By L. M. LAMM
Washington Editor, STEEL

WASHINGTON

■ PROPOSED $500,000,000 appropriation in the President's spending-lending program, to be allotted for leasing of railroad equipment, has been highly praised by Jesse H. Jones, new head of the federal loan agency. On the other hand, Senator Wheeler, Montana, chairman of the interstate commerce committee of the senate, in charge of railroad legislation, is opposed to this provision because he believes the loans should be made directly to roads.

Mr. Jones last week stated that a great deal of good can be done in getting rid of obsolete and inefficient railroad equipment. Answering the contentions of some railroad men that the government should lend money to the railroads for equipment purchases rather than leasing equipment, he asserted that he proposed to adjust the plan to each railroad's needs.

He said those roads which want outright loans, such as the RFC already is making, would continue to get them, but poorer railroads preferring to buy equipment on the equivalent of installment payments would have a new method of acquiring needed cars and locomotives.

Mr. Jones said if the railroad program went through, he hoped to offer railroads a trade-in allowance on old equipment which would be higher than the scrap value. Then, he added, he would ask the WPA to provide labor to scrap the trade-ins and salvage scrap metal or other items. The difference between the scrap and the trade-in value of the old equipment, he continued, would be made up by charging the railroads a trifle more interest.

SENATE BROADENS SCOPE OF WALSH-HEALEY LAW

Senate last week passed amendments to the Walsh-Healey act to reduce the amount of contracts coming under the law to $4000 instead of $10,000 as at present. The bill has been sent to the house.

It was estimated by the senate committee on labor that not more than 3 per cent of the number and 15 per cent of the total value of all government contracts has been affected by the existing law. The labor department, which has jurisdiction over this act, had asked congress that the contract price be reduced from $10,000 to $2000, but the committee compromised on $4000, which was passed by the upper house.

As the bill passed the senate it also brings under the law, for the first time, subcontractors and contracts for services and construction of ships and other floating equipment.

As reported by the committee, the amendments included a provision which would make contractors convicted of violating the Wagner labor act ineligible for three years to bid on government contracts. However, this was modified before it passed the senate, to provide that such contractors be taken off the black list after an administrative determination that they had permanently eliminated the violation.

TNEC URGES IMMEDIATE PATENT LAW REVISION

Temporary national economic committee has submitted a preliminary report to the senate stating that except for certain items its study has not been carried far enough to warrant specific and detailed recommendation. It urges that congress should undertake at once modification of the patent laws. Dealing with this phase of the situation the committee states:

"We endorse the action of the committees on patents of the two houses which have approved proposals for modification of the mechanics of the patent system as submitted by the department of commerce.

"In addition, the department of justice has submitted certain recommendations for legislation based on its hearings, designed to draw a sound line between the legitimate use of patents and uneconomic extensions of the patent privilege which seriously invade the national policy against monopoly and restraints of trade. The recommendations of the department of justice relate primarily to and upon freedom of opportunity for competitive enterprise. They, too, are approved by the committee for immediate action by congress. Summaries of the recommendations of both agencies are hereinafter set forth."

Seeks Stronger Civil Remedies

The report dealing with antitrust laws states that the members do not feel the committee has sufficiently surveyed the field to suggest thorough revision of antitrust procedure, "although this possibility may be definitely indicated for the future. What the character of that revision may be is still uncertain, because the committee has not yet been able to complete the necessary analysis."

Attention is also given in the report to the Clayton act, it being pointed out that the federal trade commission "has repeatedly pointed out in its annual and special reports to congress that acquisition of assets is the procedure now usually employed by corporations engaged in interstate commerce in effecting consolidations and mergers, for the purpose of evading this section; and the commission has consistently recommended that acquisition of assets be declared unlawful under the same conditions which are already applied to the acquisitions of stock."

In addition to these specific suggestions the committee made the following:

"The tendency toward concentration of control of the economic system in fewer and fewer business executives seems proved.

"The consequence of that tendency is a steadily lessening number of competitors.

"It has been the traditional conviction of the people of the United States that the opportunity of the citizen to engage in business should

not be restricted and that a system of free open competition is best calculated to preserve that opportunity.

"It is clear, however, that the financial and other resources required for economic endeavor are becoming increasingly difficult for the ordinary enterpriser to obtain and that concentration of economic power and wealth is accompanied by increasing unemployment and narrowing markets."

"The studies of the committee will be pursued in the hope of discovering measures which will offer broader markets, more employment."

BILL BANNING "POLITICS IN RELIEF" PASSED BY HOUSE

Hatch bill banning "politics in relief" and barring federal employes from political campaigns was passed last week by the house.

Teeth are claimed for the bill in certain provisions restored by house after its judiciary committee struck them out when the President objected the measure was badly drawn. Approved by the senate some weeks ago, bill now goes back for action on several amendments.

As passed it forbids a vast army of federal officeholders from participating in national party conventions or other political activity. This provision declares no person in the executive branch of the government, with the exception of the president and a few other officials, may use his authority to influence an election, or take part in "political management or political campaigns."

SEEKS RETALIATION ON IMPORTS FROM JAPAN

Matthew Woll, president of the American Wage Earners' Protective conference, last week sent a letter to Secretary Morgenthau requesting the imposition of countervailing tariff duties on imports of Japanese goods.

Woll charged that American mandatory laws are being nullified and contravened in order "that dictator-controlled nations may acquire war material from our people to rob weaker people of their lands." He further charged that imports of Japanese goods are subsidized and cited evidence "that Japanese exports are subsidized to pay for the import of war materials and a higher price is paid in the Japanese domestic markets for domestic consumption, which higher prices include a charge which is re-allocated to an export fund which is utilized as in Germany to subsidize exports which could not otherwise be marketed abroad."

It was on a similar complaint of this same organization that the treasury department some months ago imposed countervailing duties on imports of subsidized manufactured goods from Germany.

Woll contended that our mandatory laws "should be enforced to protect our revenues, to protect and promote job opportunities for some of the millions of America's unemployed and to relieve the people of America from the charge that we are an indispensable partner to the killing of innocent people."

WOULD FORM NATIONAL INSTITUTE OF METALS

Provision for the incorporation of a National Institute of Metals is made in a bill introduced in the upper house last week by Senator Andrews, Florida. The incorporators are given as follows: Claude M. Weller, Texas; Alton E. Bassett, Virginia; George A. Pritchard, Florida; James G. Coxetter Jr., Missouri; and Henry H. Buckman, Florida.

The aims of the institute include "the pursuit and encouragement of scientific, technical, and industrial research in the properties of metallic minerals, metals and alloys, and improvement of the arts of discovery, production, and utilization of the same; encouragement of their production and manufacture in accordance with higher and more uniform standards of economy, purity and utility; co-operation with federal, state and private agencies and institutions in their conservation, development, and production; and encouragement and doing of all other things which may appear desirable or appropriate to protect and promote the public interest in these minerals, metals, and alloys, and the arts and industries engaged in their production and utilization."

$1,500,000,000 TO BE ASKED FOR NATIONAL DEFENSE

National defense departments, army and navy, are already drafting appropriation needs for the fiscal year beginning July 1, 1940. Recommendations for these appropriations will have to be made to the house committee on appropriations shortly after the new session convenes in January. It is reported on good authority that the two arms of the service will ask for about a billion and a half dollars.

This is needed, it is said by army and navy experts, to maintain the enlarged army and navy forces and to take care of the expansion program authorized this year. It is reported that two additional 45,000-ton battleships are to be included in next year's appropriation.

BILL TO LIMIT EXPORTS OF IRON, STEEL AND SCRAP

Joint resolution was introduced in the house last week by Representative Allen, Pennsylvania, to prohibit export of arms, ammunition and other specific articles "under certain circumstances."

The bill provides that the President can restrict or prohibit exports of a large number of commodities in addition to arms, ammunition and implements of war with specific mention of iron ore, pig iron, unfabricated iron and steel products, finished and unfinished, and scrap iron and steel. The resolution provides that when the President issues a proclamation under this resolution he "shall definitely enumerate the articles and materials the export of which is to be restricted or prohibited by such proclamation, and shall name the foreign state or states to which such proclamation is to apply."

IRAN ASKS LOCOMOTIVES AND CARS FROM AMERICA

Specifications have been received by the transportation division of the department of commerce for a number of freight and switching locomotives, freight cars, passenger coaches and special coaches on which the Iranian railway administration has called for bids.

Bids are asked on 150 freight locomotives, 22 diesel switch engines, 1866 freight cars and 120 passenger and special coaches.

WALSH-HEALEY CONTRACTS TOTAL OVER BILLION

Secretary of Labor Perkins reports that contracts valued at over a billion dollars and numbering 14,777 had been reported to the division of public contracts of her department as subject to the Walsh-Healey act from Sept. 28, 1936, when the act became effective, until June 30 of this year. Miss Perkins said that she had approved minimum wages recommended by the public contracts board in 26 industries.

Included in the 14,777 contracts were 1503 for iron and its products valued at $71,934,844.60 which were 7.19 per cent of all of the contracts entered into during the period mentioned.

These contracts included: 27 for bolts, nuts, rivets, valued at $431,169.93; 22 for fencing materials vaued at $342,911.20; 160 for forgings and castings valued at $15,939,570.20; 41 for hardware, miscellaneous, valued at $687,008.62; 32 for metal doors, sash and frames valued at $1,345,915.97; 10 for metal shingles and roofing valued at $268,110.11; 182 for pipe and fittings valued at $5,357,259.97; 10 for plumbing supplies valued at $211,836.05; 106 for rails, bars, posts, etc. valued at $7,410,371.46; 206 for sheets, plates, shapes, etc. valued at $8,814,060.46; 53 for stoves and ranges (excluding electric) valued at $5,175,684.74; 268 for structural steel valued at $16,787,213.47; 48 for tools (excluding machine tools) valued at $1,009,053.64; 57 for wire rope and cable valued at $1,235,308.64; and 191 for miscellaneous articles valued at $6,919,369.76.

AVIATION

AIR TRAFFIC GAINS BRING ORDERS FOR BIG TRANSPORTS

■ STEADILY growing volume of passengers, mail and express, promising to tax the capacity of airline transport equipment, is bringing out long-delayed orders for giant four-engined skyliners.

United Airlines last week signed with Douglas Aircraft Co. Inc., Santa Monica, Calif., for six 42-passenger DC-4's costing nearly $3,000,000. These are to be built for overnight transcontinental service. American Airlines is showing interest in Curtiss-Wright's new 30-passenger CW-20, while Transcontinental & Western Air may buy from Boeing several 33-passenger "stratoliners". Three "stratoliners" now await outfitting before delivery to Pan American Airways.

Passenger traffic in June reached a new high, brought the domestic air transport industry into the black. During the first six months scheduled carriers flew 278,000,000 revenue passenger miles, 35 per cent over the corresponding period last year.

Hope for greater airline income through increases in mail compensation is seen in two rate cases decided last week by civil aeronautics authority. To National Airlines Inc. higher per-mile base rates were granted on two routes. In setting rates for Northwest Airlines Inc., CAA abandoned the principle of weight-credit schedules set up in the 1934 mail act, indicating the authority may now fix rates on any basis deemed necessary.

Substantial buying of large planes and appurtenant equipment is anticipated from the blue-ribbon transatlantic lines. Air France plans to operate four 60-ton "Normandie" flying boats in regular service. To be built by Latecoere Vaisseau, each ship will be powered with six Wright engines. Other American equipment is to be specified.

Marketing of new stock by American Export Lines Inc., New York, is expected to finance operation of a transatlantic air service by its subsidiary, American Export Airlines Inc. Company is now making survey flights with a Consolidated flying boat. More than $2,000,000 will be required for additional planes and other equipment.

Dutch Buy Into Firm

Sale to a Dutch banking group of 29,300 shares of Douglas Aircraft's treasury stock is announced by Donald W. Douglas, president. Proceeds of approximately $1,800,000 will swell the firm's working capital. Largest in the industry is its backlog of unfilled orders.

Rearwin Aircraft & Engines Inc., Kansas City, Kans., has filed with securities and exchange commission its proposal to issue 100,000 shares of common stock yielding $325,000. Funds are needed for working capital, research and development, and new equipment.

Lennert-Toledo Aircraft Corp., Toledo, O., proposes to build a plant at Pontiac, Mich., for producing all-metal military craft. Company has a federal contract. Recently organized in Detroit, General Aeronautic Corp. has plans for manufacturing all-metal two-place training ships.

Foundry division of Eclipse Aviation Corp., West Paterson, N. J., soon will rebuild and re-equip at cost of $40,000 the section of its plant recently destroyed by fire. Unit produces aluminum castings for aircraft parts.

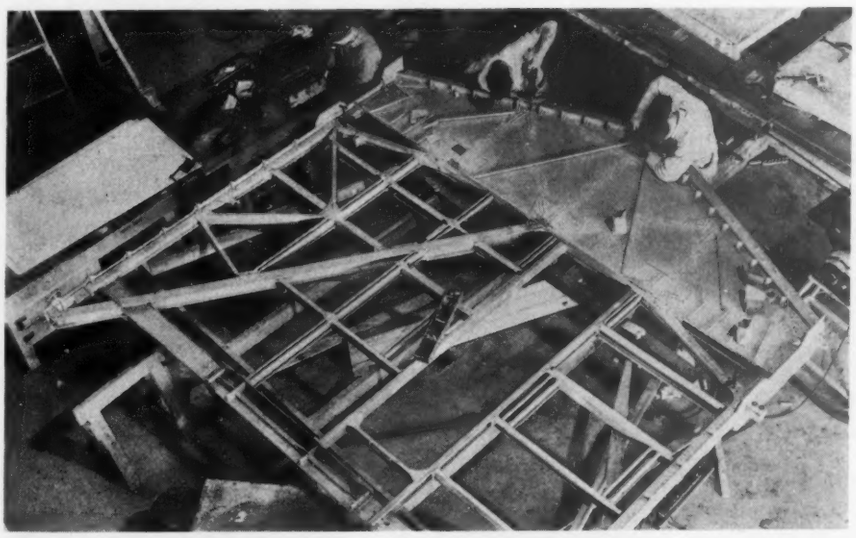
An air corps contract for shot-welded stainless steel wing panels costing $42,204 has been booked by Edward G. Budd Mfg. Co., Philadelphia. Other government aeronautical awards: For the navy, Pratt & Whitney division of United Aircraft Corp., East Hartford, Conn., engines, $1,448,977; and for the army, Pioneer Instrument Co. Inc., Bendix, N. J., indicator assemblies, $114,400; Kollsman Instrument Co. Inc., Elmhurst, N. Y., altimeters, $83,350; Eclipse division of Bendix Aviation Corp., Bendix, N. J., motors and generators, $49,238.

To safeguard secret details of new warplanes under construction, aircraft builders are quietly weeding out noncitizen employes in their plants. Under direction of the war and navy departments, many alien technicians are being released or transferred to nonmilitary work. Those retained must hold official permits, granted after a close check by federal bureau of investigation.

For grinding airplane cylinder valve seats, Hall Mfg. Co., Toledo, O., has developed a new wet-type eccentric grinder. Allowing mirror finish, it combines high precision with fast stock removal.

Wright Aeronautical Corp., Paterson, N. J., recently introduced a new 9-cylinder air-cooled radial engine. Turning out 1200 horsepower, this unit represents a 100 per cent horsepower expansion in the Cyclone series since 1931, with no increase in displacement. It is the first American-built aircraft engine of its type to use a main crankcase of steel.

Bulkhead for 42-Ton "Clipper" Flying Boat



■ **Size of today's giant airliners is indicated by this aluminum alloy bulkhead, being assembled in Boeing Aircraft's Seattle plant for use in a 74-passenger, 42-ton "Clipper" flying boat. Part shown measures 12 feet from top to bottom; when upper deck portion is added entire bulkhead will be 18 feet high. Four "Clippers" now operate over Pan American Airways' transatlantic route**

Schiavone Bonomo Corp. Buys 232-Mile Railroad

■ Schiavone Bonomo Corp., Jersey City, N. J., scrap dealer, has bought the Ft. Smith & Western railway, 232 miles of main and side track, between Ft. Smith, Ark., and Guthrie, Okla. Sale was at public auction and has been confirmed by the federal court. Schiavone Bonomo Corp. takes title to the entire property except about 12 miles of track and the terminal at Ft. Smith, which was awarded to Commercial Metals Co., Dallas, Tex.

In addition to trackage the purchase includes 11 locomotives, more than 145 freight and other cars, machinery and equipment.

IMPORTANT IN SMALL THINGS, TOO

The use of Molybdenum steels is far from being an advantage enjoyed only by the manufacturer of large or intricate machines. Makers of hand tools, for example, have found these steels a means of improving serviceability, which brings distinct sales advantages.

A well-known line of pipe wrenches is typical. A pipe wrench is really no better than its jaws. So the manufacturer makes both the movable and inserted jaw of Chrome-Molybdenum (SAE 4150) steel — a steel which assures a combination of adequate strength and toughness in the shank with high hardness — in this case 60 Rockwell — where wanted on both jaws.

Besides improving serviceability, the manufacturer has found that Chrome-Molybdenum (SAE 4150) — because it forges better — has minimized rejects.

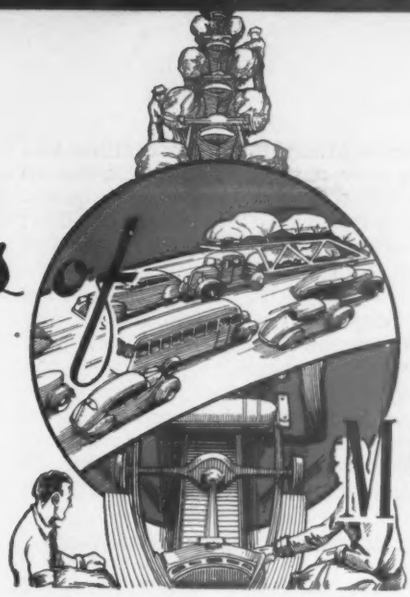
Whatever you manufacture — if steel enters into it — you will find our book, "Molybdenum in Steel", helpful. It is free on request to all production executives and engineers interested in better materials, smoother production and lower costs.

PRODUCERS OF MOLYBDENUM BRIQUETTES, FERRO-MOLYBDENUM, AND CALCIUM MOLYBDATE

Climax Mo-lyb-den-um Company
500 Fifth Avenue · New York City

MOLY

Mirrors of MOTORDOM



By A. H. ALLEN
Detroit Editor, STEEL

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DETROIT

■ WITH the exception of Ford and Chevrolet, virtually all automobile manufacturers had concluded 1939 model runs at the end of last week, and only two weeks at the most remain for these two volume producers. Thus, auto output will be thinned out over the next few weeks until other plants join Packard in getting the ball rolling for 1940 production.

First of the 1940 model previews to be announced, but probably not the first to be held, is that of Studebaker, which has been set for South Bend, Ind., Aug. 15. This date is almost a full month ahead of the showing last year of 1939 models, held Sept. 10.

Studebaker, incidentally, has been going like a house afire this year, principally because of favorable reception of its low-price Champion model. Output in June, for example, was 11,200 cars, comparing with but 3067 in the same month a year ago. Assemblies have been holding on a 5½-day per week basis, and the model changeover apparently will be made with utmost speed, since 1940 jobs will be coming off the lines by mid-August.

Recently the company has established a new owner relations division to develop and apply practical methods of facilitating interchange of ideas between the company and users of its products. Joseph A. Martz, former marketing executive, will be in charge of the new division under the supervision of K. B. Elliott, vice president.

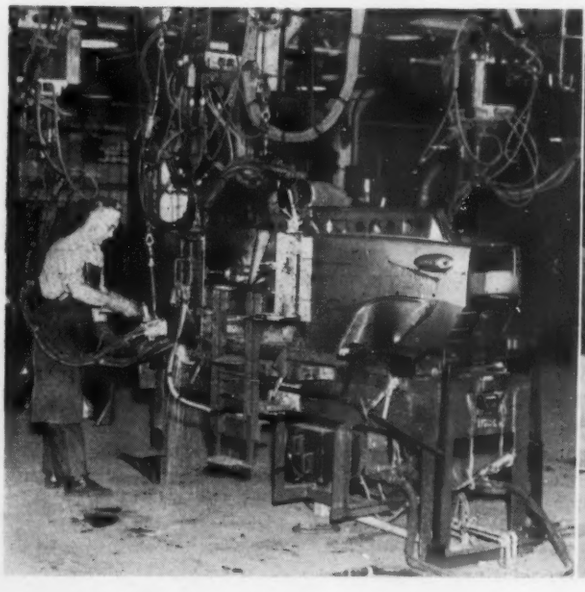
Strength of July auto sales is indicated by figures from Chevrolet which show a total of 18,498 units sold in the first ten days of the month, an increase of 41.8 per cent over the same ten days in 1938. Used car sales in the same period were 40,106 units, comparing with 35,048.

■ LOAN of $2,500,000 has been obtained from the RFC by Willys-Overland Motors Inc. at Toledo, O., to provide additional working capital and to finance retooling for new models. Terms provide the loan will run five years at 4 per cent interest with repayments beginning Jan. 1 and continuing for 60 equal monthly installments. The funds have been secured by collateral and real estate valued at $7,440,000, pledged by affiliated companies.

Willys, since its gala year in 1937, has found the going pretty rough, although lately Joseph W. Frazer,

Assembling Crosleys

■ Crosley bodies on assembly line at Murray Corp. of America's Detroit plant, supplying the final assembly plant at Richmond, Ind. At left is the main assembly fixture, with operator welding seat side to the underbody. View at right shows final inspection and touchup of painted bodies moving along conveyor to the shipping dock



new president, has been working mightily to improve the company's position. The RFC money should permit extensive effort in sales promotion, advertising, research and development. At the same time, Mr. Frazer has been aiming at a policy of supplying the company's needs on a more current basis, so that materials for cars can be moved more directly into assembly lines. Such a plan reduces handling charges and saves on storage and insurance.

This policy of letting suppliers carry the inventory of parts and materials is one which automobile companies for the past ten years have been furthering a little more each year, as a study of balance sheets will reveal readily. Blanket specifications usually are issued for probable requirements over a year's time, and then materials or parts released in small quantities as they are needed. There is not near the quantity of steel, brass, aluminum, upholstery, parts and like items carried in stock by the motor companies that there used to be. Large inventories take up too much valuable plant space, and often are subject to deterioration for which the supplier cannot be held accountable.

■ REPORTS from outside Detroit are to the effect some $500,000 worth of electric induction hardening equipment has been proposed for installation in motor plants this summer in connection with revamping certain heat treating operations so that parts can be hardened as they pass along subassembly lines and do not have to be trucked to and from heat treating departments. Heat treating authorities here believe this figure is high, although one such job, involving expenditure of $200,000, definitely is being installed.

The induction hardening process is now used on camshafts and crankshafts extensively to local harden bearing surfaces and cam edges. It is a rapid process and provides a high degree of uniformity, but original equipment costs are high and a most precise control of current and time must be exercised. Best known of the various induction hardening processes is the Tocco method originated by Ohio Crankshaft Co. in Cleveland. Another, applied principally to "inside diameters" on inner surfaces of hollowed parts is that developed by Budd Induction Heating Inc. It is estimated that about 3,500,000 automotive wheel hubs, of both forged steel and cast steel, have been processed by the latter treatment.

An installation has been drawn up for Chevrolet at Bay City, Mich., to harden portions of the hollow rocker arm shaft used on Chevrolet engines. This shaft, of steel tubing, must be held within close limits as far as straightness is concerned and in view of the fact that with the induction process it is possile to obtain Rockwell C. hardness of 60 on bearing surfaces and leave the rest of the shaft Rockwell 20, or comparatively soft, the heat treated shafts can be straightened easily.

Furnace builders report new heat treating furnace installations in the motor industry this year are below the level of past years, and prospects are that not much further change in this equipment will be made immediately. One of the most interesting setups locally is that developed for automatic heat treating of cylinder liners in the Ford plant. Copper plating equipment, presses, washers and bright annealing furnaces have been combined in a line which has capacity of 2000 liners per hour and eventually will be fully automatic except for a man placing a stack of steel blanks at the first operation. This equipment has been installed in a building adjacent to the new Ford press shop and, should the cylinder liners be adopted in all Ford engines, three more lines like the present one would be needed.

■ USE OF THE term torque instead of horsepower as a means of measuring engine performance is preferred by engineers questioned by the aluminum cylinder head committee of the Aluminum association. It is pointed out that actually horsepower rating means nothing to the average car owner, since a properly designed engine of relatively low horsepower could outperform a high-horsepower engine under practically every condition of operation. If engine performance could be rated in foot-pounds of torque at 1000 r.p.m., it would mean far more than the number of horsepower the engine would develop if running wide open at peak horsepower speed, one designer noted, adding that the need today is for good 75-horsepower, high-compression, high-torque engines, rather than power plants which have been modified to push the horsepower rating up, possibly for advertising purposes.

Important steel buys for initial requirements on 1940 models probably will be made this week by Ford and Briggs. Ford is understood to be purchasing steel for 175,000 cars and the total amount may reach 100,000 tons. This should cover production well into October.

■ STRIDENT demands made upon General Motors in behalf of tool and die makers belonging to the UAW-CIO, including a union label on all tools and dies, were modified considerably last week, when it became apparent the corporation would not consider a supplemental agreement for tool and die workers unless the union waived all rights of its members under the present contract it has with the corporation. Naturally the UAW-CIO could not accede to this, so demands were narrowed down to a wage increase, changes in seniority and apprentice provisions. Conferences were started in Fisher plant 23 here between the local plant committee and representatives of the management in the hope a pattern of settlement could be worked out which would apply to other divisions now on strike. At midweek, the discussions appeared deadlocked and federal labor conciliator Dewey expressed doubt over any immediate agreement.

Every day of delay now means an equivalent delay in new model introductions by General Motors divisions, but there seems to be no extraordinary pressure being brought to bear toward adjusting the strike. A meeting of all striking unionists was scheduled for Friday, either to ratify a settlement or to consolidate plans for furthering the strike, depending upon the situation.

The Packard local of the UAW, said to be the largest and wealthiest of the automobile plant locals, has severed connections with the UAW-AFL or Homer Martin wing, and has joined the UAW-CIO. This is a serious blow to the Martin forces, and leaves them only a scattered following.

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1937	1938	1939
Jan.	399,186	227,130	353,946
Feb.	383,900	202,589	312,141
March	519,022	238,598	389,489
April	553,231	238,133	354,263
May	540,377	210,183	313,214
June	521,153	189,399	*308,281
6 mos.	2,916,869	1,306,057	2,031,334
July	456,909	150,444	.....
Aug.	405,072	96,936	.....
Sept.	175,630	89,623	.....
Oct.	337,979	215,296	.....
Nov.	376,629	390,350	.....
Dec.	347,349	407,016	.....
Year	5,016,437	2,655,777	.....

*Estimated.

Estimated by *Ward's Reports*

Week ended:	1939	1938†
June 24	81,070	40,918
July 1	70,663	40,945
July 8	42,784	25,375
July 15	61,610	42,010
July 22	47,420	32,070

†Comparable week.

	Week Ended July 22	July 15
General Motors	18,450	18,425
Chrysler	5,900	18,320
Ford	17,000	18,500
All others	6,070	6,365

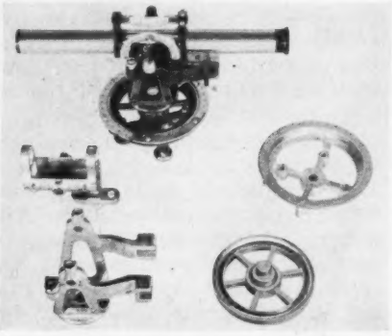
CAN DIE CASTINGS AID IN SELLING?

—SALES VOLUME—
APPEARANCE
DURABILITY
STRENGTH
SELLING PRICE

—A Quiz

SELLING PRICE

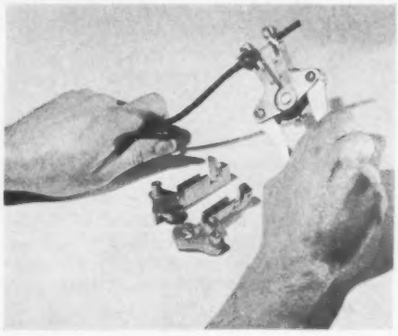
Q Does the use of die castings present any sales advantage in the way of price?



A Impressive production economies, made possible through the elimination of costly machining and assembling operations, often influence the selling price of the product containing ZINC Alloy Die Cast parts. Thus, a traditionally expensive item — such as this surveyor's transit — can be sold at a price which makes it outstanding in its field.

DURABILITY

Q Would it be advantageous to mention the use of die castings in stressing toughness?



A The manufacturer of this wire stripping tool finds that there are practically no failures in the field, although the unit is subjected to considerable abuse. The two jaw parts shown in the illustration are ZINC Alloy Die Castings.

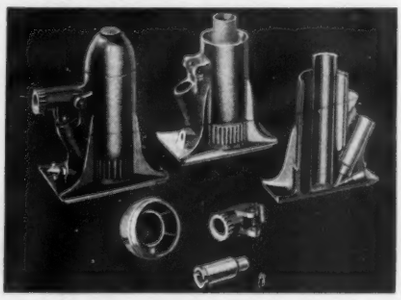
APPEARANCE

Q Is the appearance of die castings an outstanding sales aid?

A "One picture is worth 10,000 words" — the realistic detail of this scale model locomotive — the factor which governs its acceptance — is made possible with ZINC Alloy Die Castings. No other production process could have economically achieved this realism.

STRENGTH

Q Are the strength characteristics of ZINC Alloy Die Castings such that this feature can be used as a sales point?



A "This hydraulic automobile jack will withstand a pressure of 60 tons" — a sales argument made possible by the use of a die cast housing. The housing is shown as cast and sectionalized.

If *your* products contain ZINC Alloy Die Castings ask us whether you have sales arguments available which you are not now using. If you have not, as yet, adopted die cast parts, you will profit from a talk with a commercial die caster — or write to The New Jersey Zinc Company, 160 Front Street, New York City.

ZINC ALLOY DIE CASTINGS

The Research was done, the Alloys were developed, and most Die Castings are specified with

HORSE HEAD SPECIAL (99.99+% Uniform Quality) ZINC

Estimate Season's Ore Shipments at 34,000,000 Tons; 180 Vessels Engaged

■ LAKE SUPERIOR iron ore shipments for 1939 will approximate 34,000,000 tons, most iron ore authorities now believe. This is a downward revision from the 40,000,000-ton movement forecast at the season's opening and is necessitated by the rather disappointing rate of consumption during the past three months.

If further revisions in estimates of shipments are made, they are likely to be upward, say the shippers, many of whom anticipate a gradual improvement in iron and steel making during the late summer and autumn. Continuing gains in blast furnace operations may result in stepping up ore shipments during the closing months of the season, they opine.

Comparison of monthly shipments this year with those in 1929, 1932 and 1938:

	1929	1932	1938	1939
	(Thousands of Tons)			
April	2,516	44	261	57
May	9,549	111	1,181	3,601
June	10,174	234	2,838	5,573
3 Mos. total	22,239	389	4,280	9,231
Year	65,204	3,567	19,263	34,000*

*Estimated.

Vessels engaged in the ore trade as of July 15, totaled 180, almost double the 92 so engaged on the same date last year. Of this year's fleet of 302 vessels, 206 or 68.2 per cent are in commission, compared with 195 or 64.4 per cent of the total fleet July 15 last year. In 1937, the entire fleet of 312 vessels was engaged in the ore trade.

Iron ore stocks at lower lake ports and furnaces May 1 totaled 22,790,933 tons, down sharply from the 33,676,333 tons on hand on the same date last year. However, since May 1 stocks have increased to 25,861,237 tons as of July 1, or slightly above the 24,394,979 tons reported on July 1, 1937, when consumption was averaging approximately 5,000,000 tons a month.

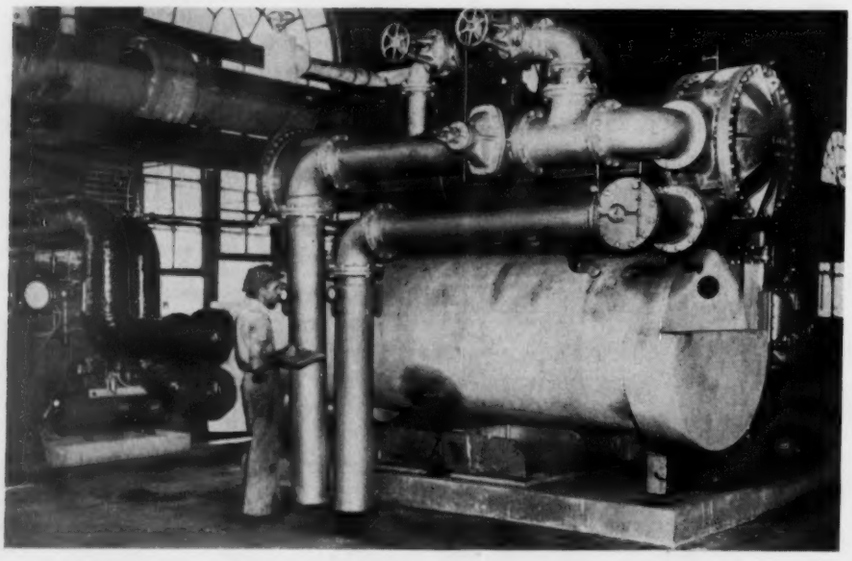
How this year's stocks at lower lake docks and furnaces compare with other selected years:

	May 1	July 1	Dec. 1
1929	15,929,901	23,701,011	41,499,687
1932	33,478,882	32,158,672	32,083,723
1937	14,632,038	24,394,979	43,625,954
1938	33,676,333	34,329,223	37,456,325
1939	22,790,933	25,861,237	.....

In the first six months this year Lake Superior ore consumption amounted to 16,973,000 tons, an increase of 59.1 per cent over the 10,665,000 tons consumed in the first half of 1938. However, the total iron ore consumed in the first six months this year is only about half the 32,552,000 tons consumed in the corresponding 1929 period. A comparison of monthly consumption figures for selected years follows:

	1929	1932	1938	1939
	(Thousands of Tons)			
Jan.	5,195	1,153	1,923	2,927
Feb.	4,818	1,174	1,726	2,853
March	5,465	1,255	1,980	3,317
April	5,417	1,039	1,853	2,800
May	5,980	918	1,711	2,246
June	5,677	731	1,472	2,830
Total	32,552	6,270	10,665	16,973

Refrigerating Unit at Southern Blast Furnace



■ Twenty tons of water is removed from 2700 tons of air daily by the Carrier air conditioning equipment now in operation at one of Woodward Iron Co.'s blast furnaces in Alabama. Refrigerating unit is shown above. The process employs a spray-type dehumidifier wherein air passes through three sprays of refrigerated water. Moisture-free air then is fed to blowing engines and thence to the stoves and furnace at controlled temperatures

NAM To Honor Research Workers, Inventors

■ American patent system's 150th anniversary will be celebrated in October by nationwide observance of Modern Pioneers' Day, sponsored by the National Association of Manufacturers. Honored will be outstanding inventors and research workers — today's pioneers — whose discoveries have created new industries and new jobs, raised the nation's standard of living.

Howard Coonley, president of the association, has named a committee to determine the basis for making awards and map other details. With Robert L. Lund, executive vice president, Lambert Pharmacal Co., St. Louis, as chairman, the group met last Tuesday at Waldorf-Astoria hotel, New York.

Industrial firms throughout the United States are to be invited to submit names of those whose new products and new processes have contributed most to progress. A board of distinguished scientists will select the most worthy for recognition at Modern Pioneer dinners in various industrial cities.

Finished Goods, Raw Materials Stocks Decline

■ Manufacturers' finished goods inventories declined slightly during May to approximately the level existing at start of the year, according to estimates of the National Industrial Conference board. Holdings were 4.8 per cent lower than at the end of May, 1938, despite the fact industrial production was 21 per cent greater.

Raw material stocks continued the downward trend which has been operating since April, 1938, registering a new low for the past six years. Primary cause for the decline in May was said to be a sharp reduction in manufacturers' holdings of bituminous coal as a result of the strike tieup at mines.

The board's indexes (1936=100), adjusted for seasonal variation:

	May 1939	April 1939	May 1938
Raw materials	95.9	96.6	115.9
Semifinished goods	114.3	113.7	122.6
Finished goods	110.0	110.9	115.5

Stainless' Adaptability To Modern Industry's Demands Shown at Fair

NEW YORK

■ INCREASING and more varied uses for stainless steel feature the fair exhibit of Edward G. Budd Mfg. Co., Philadelphia. In fact, stainless so monopolizes the display that it well might be taken for that of the producing industry itself.

On approaching, the visitor is confronted by a modernistic fountain of stainless steel and a stainless "star" in the fountain pool. From a structural standpoint, the fountain is unique, being fabricated from thin gage corrugated sheets supported by a single channel section. The end of the entire structure is 26 feet from the base. The "star" is 22 feet high, weighs a ton.

Shows Wide Range

Main part of the exhibit is strikingly set off by four umbrellas, 60 feet in diameter, weighing 15,000 pounds each, and supported by six shot-welded stainless columns. Umbrellas provide shelter for visitors and a large number of products, from small stampings, food containers, screens, dyeing spools for textile trade and fume ducts for the chemical industries, to water tanks for railroad cars, streamlined railroad car sections, airplane sections and a rayon plant in operation.

Rayon plant is a new type which reduces the time required, from spinnerette to spool, to 2½ minutes from the 36 hours needed in the viscose process. All working parts are stainless steel. Spinning solution is made by dissolving cotton in a mixture of ammonia and copper hydroxide. The solution is forced through spinnerettes, emerging into a caustic coagulating bath which changes the solution to filaments which then travel up a revolving, inclined cylinder, meeting acid which neutralizes the caustic and washes out the copper.

A flying boat section of stainless constructed by the shot-weld process was loaded to 16,587 pounds under conditions which would simulate shock and pressure in landing, except that the load was in excess of that encountered in service.

Also shown is a section of a stainless steel railroad passenger car which demonstrates the transition from flat strip into the completed car. A novel register shows the miles being traveled by stainless cars now in service on such roads as the New York Central, Reading, Boston & Maine, Santa Fe, Burlington, Rock Island, Seaboard and the B. M. T. subway in New York.

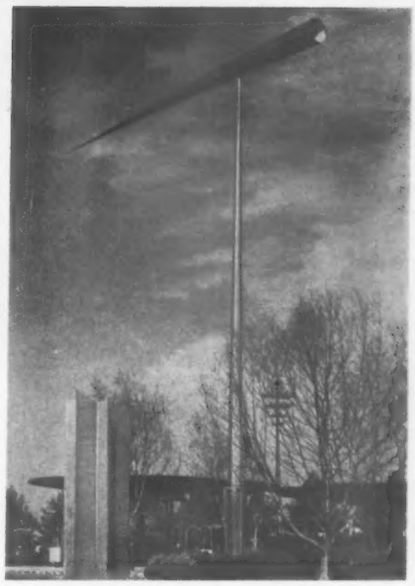
Demonstrate New Brake

Company also displays a railway car truck, fabricated largely from stainless, weighing 13,465 pounds, representing a 3235-pound weight saving over conventional design. Braking system departs from the usual cast shoe applied directly to the wheel. In this type, braking is against flanges with radial cooling fins, two being mounted on each axle. The brake is so designed that the cylinder controls one arm and the piston the other, thus effecting a pincher-like gripping action. Shoes are asbestos blocks.

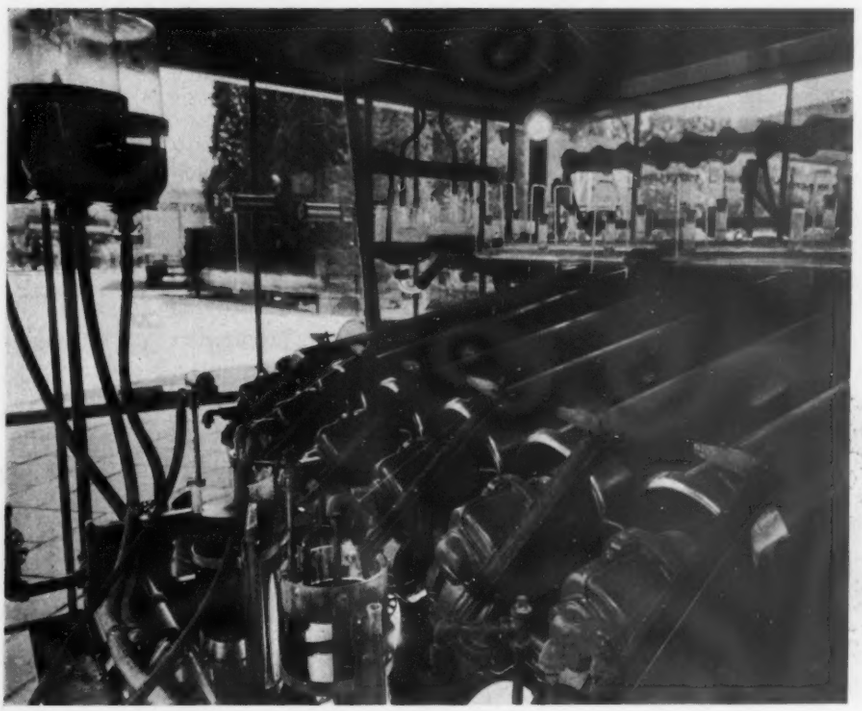
Stainless' physical properties are demonstrated in a series of exhibits. In the first, straps ⅞-inch by ⅛-inch by about two feet long, respectively of carbon, low-alloy high-tensile and 18-8 chrome-nickel steels are loaded with large stone weights to their elastic limits. The weights of the loads are respectively 3717, 5664 and 12,880 pounds.

In the second series, a riveted structural steel truss weighing 151.5 pounds supports a stone block weighing 12,880 pounds. The second truss was arc-welded from low-alloy high-tensile steel weighing 86.5 pounds and supports a weight of the same size. A truss shot-welded from 50 pounds of 18-8 stainless supports a similar weight. A series of "sunflowers" made from the same steels shows their varying resistance to corrosion.

Exhibit is supplemented by several stainless railroad cars, and automobile truck bodies. An interesting part of the display is an open Oakland automobile body, 1912 model, one of the first steel bodies.



■ Eighty-foot stainless steel windsock towers 90 feet on its rustless, noncorrosive mast, highlights Budd's fair exhibit



■ Budd-built rayon machine—all working parts are stainless—shortens rayon filament making process to little more than two minutes

Editorial

Let's Think Realistically

■ MACHINE builders will do well to appraise present conditions realistically. Blind and fanatical "defense of the machine" campaigns are not going to help us out of our troubles. The machine does not need that kind of defense, which is oftentimes just as biased and just as thoughtless as the persecution of the machine by its detractors.

STEEL believes industry should concentrate its energies on a carefully planned—but not necessarily sensational—drive to promote sound recovery. This is the aim behind STEEL's Forum on Re-Employment (p. 39) in which many able industrial leaders have advanced their ideas as to how the unemployment problem can be solved.

Unless and until we have sound recovery, the machine—as it always has been—will be vulnerable to attacks from misguided politicians, self-styled economists, labor leaders and even from working people who are convinced or who pretend to be convinced that the machine contributes toward unemployment.

Many Forward-Looking Employers Provide Jobs for Displaced Workers

In times of depression there apparently is considerable ammunition for the critics of the machine, and many instances can be cited where improved machinery apparently has reduced the number of jobs. We repeat the word "apparently," because the really well informed know that in any such cases the machine actually makes many more jobs than it eliminates. The unfortunate thing is that the machine—being impersonal—does not give the jobs it creates to the men it has displaced. That is something which definitely is up to management.

Realizing that, an increasing number of companies constructively interested in the future of the machine as well as in good industrial relations, are adopting the policy of installing improved production machinery—especially self-acting machinery—only after they have provided for the relocation, in their own plants on desirable jobs, of the men who will be displaced by this new machinery.

Machine Needs Only Wise Handling To Continue Benefits to Mankind

Any other kind of "defense of the machine" is like fighting a rearguard action. It is poor psychology. It implies the machine is on the defensive. It encourages the critic of the machine. It fails to register effectively with the average voter who does not think through to a logical conclusion on these matters.

Isn't it time for industry in general to scrap all policies that have the defensive smack? It is an old maxim that there is no defense as good as a strong offense.

"As in times past," is the promise and the plea of the machine, "I can provide widespread employment in the production of goods needed and desired by humanity. As in times past, I can contribute to the public purchasing power and the general welfare of the country. Just give me the benefit of laws that will encourage the investment of money in industry on a large scale, and of government policies that will encourage recovery. Give me management which will apply me thoughtfully. After all, I am only a tool to be guided and used for the service of mankind."

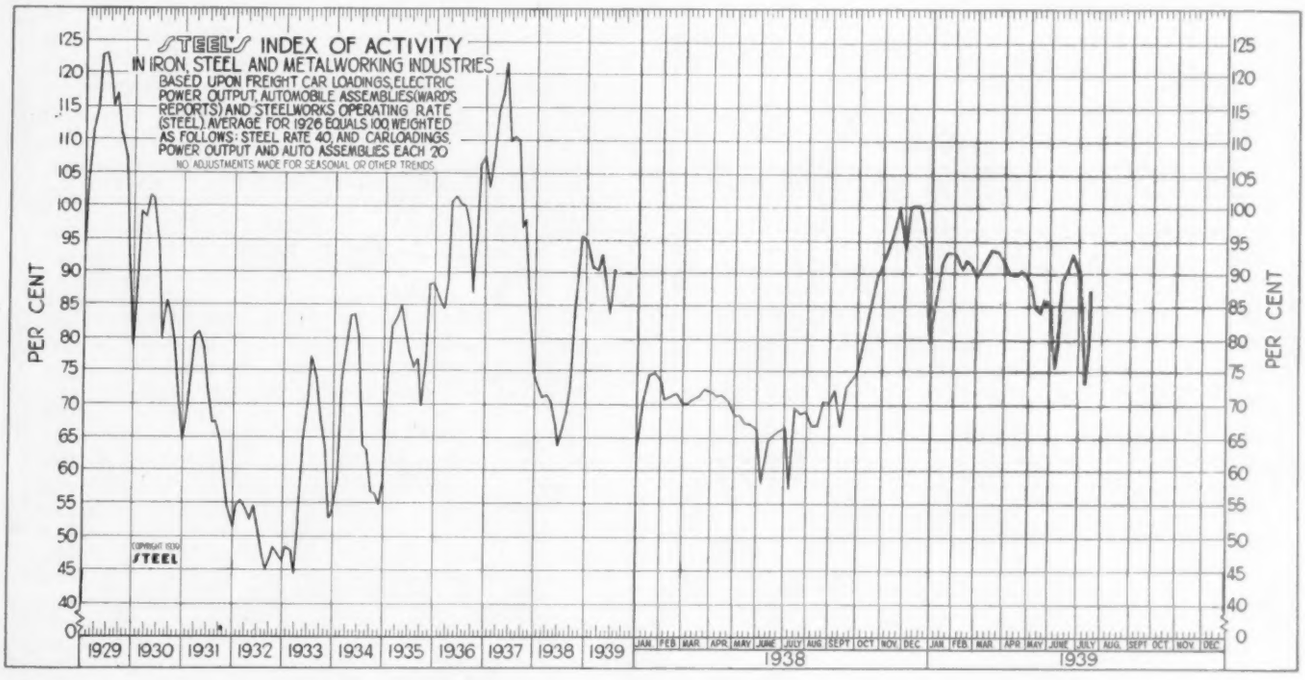
The BUSINESS TREND

Sentiment Improves on Post Holiday Gains

■ IMPROVED business sentiment has become increasingly evident recently, reflecting the encouraging rebound of most industrial indicators from the holiday interruption. Added factors brightening the business outlook is the recent upward tendency of security values and the advance in steel scrap prices. If industrial activity can continue to hold its own through July, or better still, register a slight upward trend during this period of normal seasonal dullness, there would be sound indications that substantial gains in activity are likely to develop during the early fall months.

STEEL'S index in the week ended July 15 regained the greater portion of the ground lost during the Fourth of July week, and still further improvement is expected to be recorded during the week ended July 22. The index now stands at 87.8, a gain of 14.4 points over the preceding holiday week and compares with the index figure of 69.9 recorded in the same week last year.

Steelmaking operations increased 8.5 points to 52.5 per cent in the week ended July 15, but remained below the pre-holiday level of 54 per cent. However, further sharp gain in the national steel rate in the latest week forced this important business indicator above the pre-holiday rate. Steel producers report an encouraging volume of orders from miscellaneous consumers, which


STEEL'S INDEX OF ACTIVITY
IN IRON, STEEL AND METALWORKING INDUSTRIES
BASED UPON FREIGHT CAR LOADINGS, ELECTRIC POWER OUTPUT, AUTOMOBILE ASSEMBLIES (WARD'S REPORTS) AND STEELWORKS OPERATING RATE (STEEL). AVERAGE FOR 1926 EQUALS 100. WEIGHTED AS FOLLOWS: STEEL RATE 40, AND CAR LOADINGS, POWER OUTPUT AND AUTO ASSEMBLIES EACH 20.
NO ADJUSTMENTS MADE FOR SEASONAL OR OTHER TRENDS.
PER CENT
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939
1938
1939

STEEL'S index of activity increased 14.4 points to 87.8 in the week ended July 15:

Week ending	1939	1938
April 29	89.2	68.4
May 6	85.1	68.5
May 13	84.2	67.2
May 20	86.6	67.1
May 27	85.4	66.5
June 3	75.9	58.1
June 10	88.2	64.4
June 17	90.9	65.2
June 24	93.0	66.0
July 1	91.0	66.5
July 8	73.4	57.1
July 15	87.8	69.9

Mo. Data	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929
Jan.	91.1	73.3	102.9	85.9	74.2	58.8	48.6	54.6	69.1	87.6	104.1
Feb.	90.8	71.1	106.8	84.3	82.0	73.9	48.2	55.3	75.5	99.2	111.2
March	92.6	71.2	114.4	88.7	83.1	78.9	44.5	54.2	80.4	98.6	114.0
April	89.8	70.8	116.6	100.8	85.0	83.6	52.4	52.8	81.0	101.7	122.5
May	83.4	67.4	121.7	101.8	81.8	83.7	63.5	54.8	78.6	101.2	122.9
June	90.9	63.4	109.9	100.3	77.4	80.6	70.3	51.4	72.1	95.8	120.3
July	....	....	66.2	110.4	100.1	75.3	63.7	77.1	47.1	67.3	79.9	115.2
Aug.	....	....	68.7	110.0	97.1	76.7	63.0	74.1	45.0	67.4	85.4	116.9
Sept.	....	....	72.5	96.8	86.7	69.7	56.9	68.0	46.5	64.3	83.7	110.8
Oct.	....	....	83.6	98.1	94.8	77.0	56.4	63,1	48.4	59.2	78.8	107.1
Nov.	....	....	95.9	84.1	106.4	88.1	54.9	52.8	47.5	54.4	71.0	92.2
Dec.	....	....	95.1	74.7	107.6	88.2	58.9	54.0	46.2	51.3	64.3	78.3

has more than off-set the seasonal lag in buying by the automotive and other normally large consumers.

The rebound in automobile production to 61,610 units during the week ended July 15 from the holiday week total of 42,784 was better than anticipated in view of seasonal decline in production now underway. In the same week last year assemblies totaled 42,010. Early estimate of retail sales during June totaled 230,000 units, according to R. L. Polk & Co. This represents a decline of approximately 17.8 per cent from the 280,634 units sold in May, but is 48 per cent above the June, 1938, total of 156,393. Latest reports from Detroit show retail demand for new cars and trucks in the early part of this month has receded from the June levels, although holding well ahead of last year.

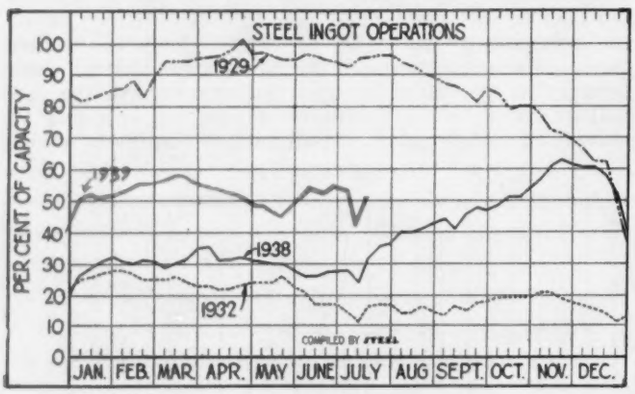
Both electric power consumption and revenue freight carloadings rebounded sharply in the week ended July 15, to touch new highs for the year. Power output at 2,324,181,000 kilowatt-hours is at the highest level since the week ended Dec. 24, while freight traffic increased 114,703 cars to 673,813, a new high since Nov. 5, 1938.

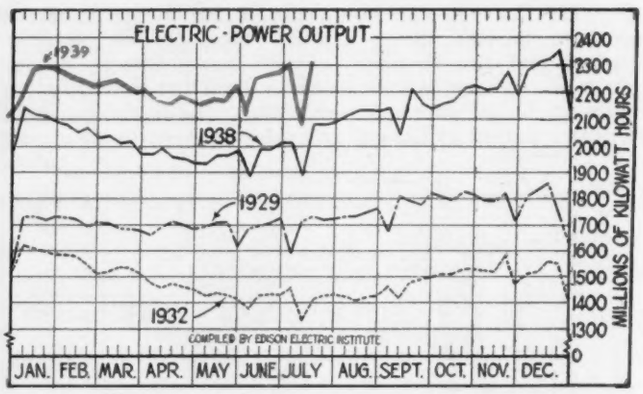
STEEL SHIPMENTS IMPROVED DURING JUNE

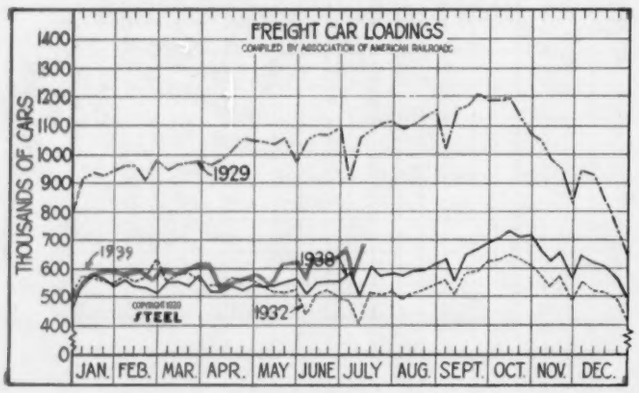
Shipments of finished steel products by the United States Steel Corp. recorded a slight improvement during June to 733,433 tons. This represents an increase of 10,268 tons over the May total of 723,165 and exceeds the June, 1938, shipments of 478,057. In the first six months this year finished steel shipments aggregated 4,393,266 tons, an increase of 45.9 per cent over the comparable 1938 period of 3,010,354 tons. However, during the first half of 1937 shipments aggregated 7,614,274 tons.

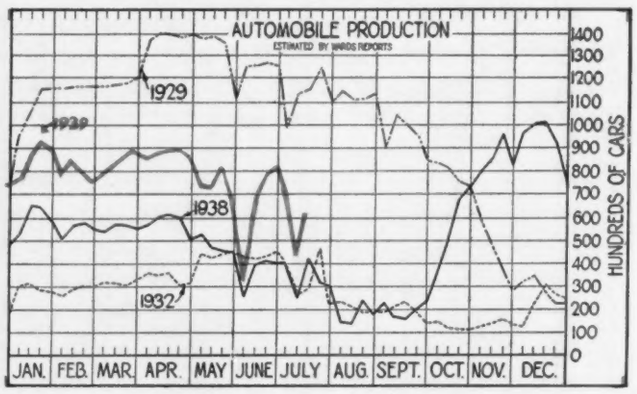
CONSTRUCTION VOLUME RECEDES FURTHER

Valuation of construction awards in the 37 eastern states during June continued the downward tendency recorded in May from the peak this year reached in April, according to F. W. Dodge Corp. However, the dollar valuation of awards last month remained well above the comparable period in 1938. The June figure of $288,316,000, compares with $308,487,000 in May and $251,006,000 in June, 1938. Non-residential building awards increased last month, but this gain was more than offset by the decline in residential building, public works and utilities construction. In the first half this year the dollar valuation of construction contracts awarded represented an increase of 31.3 per cent over the comparable 1938 total.

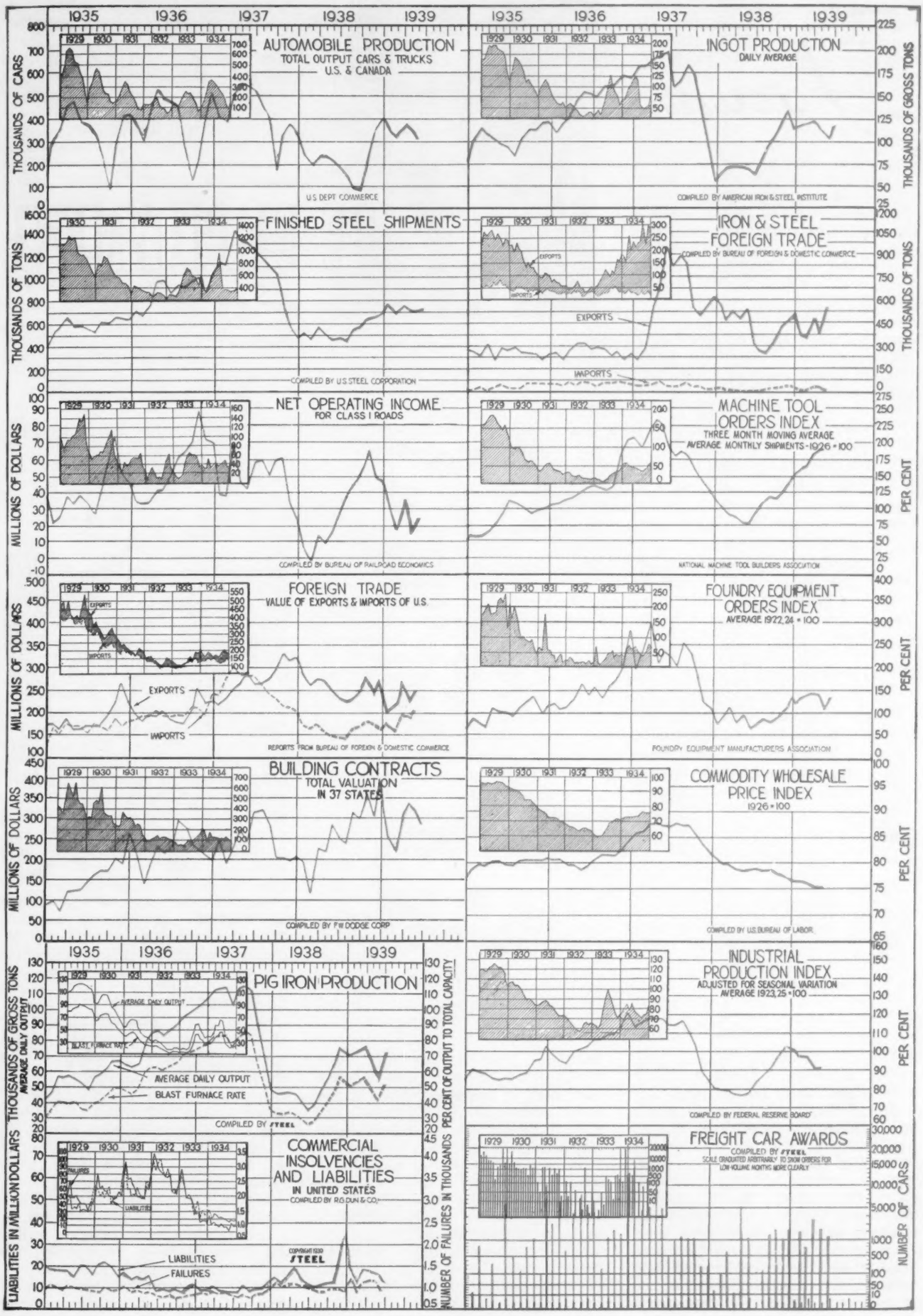




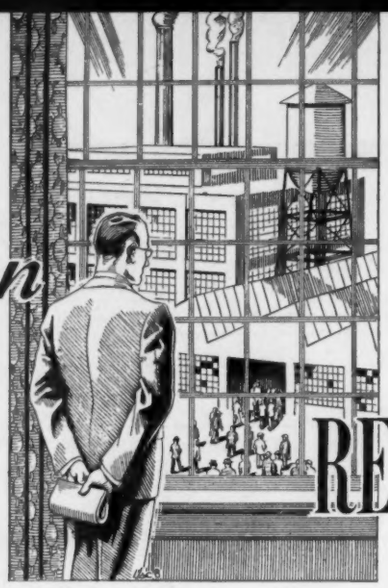




Week ending	Steelworks Operating Rate Per Cent 1939	1938	1932	1929	Electric Power Output Million KWH 1939	1938	1932	Freight Car Loadings Thousands of Cars 1929	1939	1938	1932	1929	Weekly Auto Output 1939	1938	1932	1929
Apr. 8	53.5	32.0	22.0	95.5	2,173	1,990	1,465	1,663	535	522	545	956	87,019	60,975	35,390	138,417
Apr. 15	51.5	32.0	22.0	96.0	2,171	1,958	1,480	1,697	548	538	567	972	88,050	62,021	35,778	140,822
Apr. 22	50.5	32.5	23.0	98.0	2,199	1,951	1,469	1,709	559	524	562	1,004	90,280	60,563	30,672	140,290
Apr. 29	49.0	32.0	24.0	101.0	2,183	1,939	1,445	1,700	586	543	554	1,052	86,640	50,755	31,121	139,732
May 6	49.0	31.0	24.0	97.0	2,164	1,939	1,429	1,688	573	536	534	1,050	71,420	53,385	43,899	140,672
May 13	47.0	30.0	24.0	97.0	2,171	1,968	1,436	1,698	555	542	517	1,048	72,375	47,415	42,587	138,541
May 20	45.5	30.0	25.5	96.0	2,170	1,968	1,435	1,704	616	546	516	1,046	80,145	46,810	43,470	139,528
May 27	48.0	28.5	23.0	95.0	2,205	1,973	1,425	1,705	628	562	521	1,061	67,740	45,120	45,121	136,032
June 3	52.0	25.5	21.0	95.0	2,114	1,879	1,381	1,615	568	503	447	972	32,445	26,980	44,116	111,372
June 10	53.5	25.5	17.0	96.5	2,257	1,992	1,435	1,690	635	554	502	1,055	65,265	40,175	43,491	125,307
June 17	52.5	27.0	17.0	96.0	2,265	1,991	1,441	1,699	638	556	518	1,069	78,305	41,790	44,121	126,125
June 24	54.5	28.0	17.0	94.0	2,285	2,019	1,440	1,723	643	559	499	1,096	81,070	40,918	45,110	125,736
July 1	54.0	28.0	14.5	93.0	2,300	2,015	1,456	1,592	666	559	480	909	70,663	40,945	40,291	98,746
July 8	42.0	24.0	12.0	95.0	2,078	1,881	1,341	1,712	559	501	416	1,065	42,784	25,375	26,560	113,586
July 15	50.5	32.0	15.5	95.5	2,234	2,084	1,415	1,727	674	602	504	1,079	61,610	42,010	29,870	115,075


AUTOMOBILE PRODUCTION
TOTAL OUTPUT CARS & TRUCKS U.S. & CANADA
U.S. DEPT COMMERCE
INGOT PRODUCTION
DAILY AVERAGE
COMPILED BY AMERICAN IRON & STEEL INSTITUTE
FINISHED STEEL SHIPMENTS
COMPILED BY U.S. STEEL CORPORATION
IRON & STEEL FOREIGN TRADE
COMPILED BY BUREAU OF FOREIGN & DOMESTIC COMMERCE
EXPORTS
IMPORTS
NET OPERATING INCOME
FOR CLASS I ROADS
COMPILED BY BUREAU OF RAILROAD ECONOMICS
MACHINE TOOL ORDERS INDEX
THREE MONTH MOVING AVERAGE
AVERAGE MONTHLY SHIPMENTS-1926 = 100
NATIONAL MACHINE TOOL BUILDERS ASSOCIATION
FOREIGN TRADE
VALUE OF EXPORTS & IMPORTS OF U.S.
EXPORTS
IMPORTS
REPORTS FROM BUREAU OF FOREIGN & DOMESTIC COMMERCE
FOUNDRY EQUIPMENT ORDERS INDEX
AVERAGE 1922-24 = 100
FOUNDRY EQUIPMENT MANUFACTURERS ASSOCIATION
BUILDING CONTRACTS
TOTAL VALUATION IN 37 STATES
COMPILED BY F.W. DODGE CORP
COMMODITY WHOLESALE PRICE INDEX
1926 = 100
COMPILED BY U.S. BUREAU OF LABOR
PIG IRON PRODUCTION
AVERAGE DAILY OUTPUT
BLAST FURNACE RATE
COMPILED BY STEEL
INDUSTRIAL PRODUCTION INDEX
ADJUSTED FOR SEASONAL VARIATION
AVERAGE 1923-25 = 100
COMPILED BY FEDERAL RESERVE BOARD
COMMERCIAL INSOLVENCIES AND LIABILITIES
IN UNITED STATES
COMPILED BY R.G. DUN & CO.
LIABILITIES
FAILURES
COPYRIGHT 1939 STEEL
FREIGHT CAR AWARDS
COMPILED BY STEEL
SCALE GRADUATED ARBITRARILY TO SHOW ORDERS FOR LOW-VOLUME MONTHS MORE CLEARLY
THOUSANDS OF CARS
THOUSANDS OF GROSS TONS
THOUSANDS OF TONS
MILLIONS OF DOLLARS
PER CENT
LIABILITIES IN MILLION DOLLARS
THOUSANDS OF GROSS TONS AVERAGE DAILY OUTPUT
NUMBER OF FAILURES IN THOUSANDS
PER CENT OF OUTPUT TO TOTAL CAPACITY
NUMBER OF CARS

Forum on RE-EMPLOYMENT



■ We are privileged this week to present in the Forum an article of vital importance by one who well can be called a dean of machine tool builders.

August H. Tuechter started out in 1885 as office boy for the late Henry Bickford, one of the pioneer machine tool builders in Cincinnati. After having risen to the position of general manager in the Bickford organization, Mr. Tuechter became general manager of the Cincinnati Machine Tool Co. When this company took over the Bickford company in 1909, Mr. Tuechter was made president of the resulting Cincinnati Bickford Tool Co., which company he still heads.

This Forum contributor also is actively associated with a number of other important industrial, financial and public welfare projects. Nevertheless he manages somehow to find time to serve as an able and influential spokesman for the machine tool industry when occasion demands.

In line with his constructive suggestions for discouraging undesirable and unnecessary "rush orders" for machine tools, Mr. Tuechter says: "Another thing which would go far toward helping our industry to stabilize its employment would be for all large buyers to adopt logical budget systems such as a few of them already have successfully in operation. I know of one company, which is a large buyer of machine tools, which for a number of years has been following a buying budget policy—not only setting up yearly budgets but also breaking these down so as to provide regular month by month purchases throughout the year."

—The Editors

■ One of the sadly discouraging phases of the machine tool industry always has been the extreme unevenness of its employment. When business is good, all available skilled workmen are employed. As a matter of fact they often have to work overtime, which of course does increase their income greatly for the time being. On the other hand, when business slumps off there is little or no work for the machine tool builders and layoffs of some of their most capable men are forced by circumstances. While it is not easy even for these skilled men to find desirable jobs elsewhere at such times many of them always have succeeded in doing so. Then in the event of an upswing it is often difficult if not impossible for machine tool builders to get them back again.

It is obvious that if the undue height of the peaks of our industry somehow could be reduced and the appalling depths of its economic valleys correspondingly lessened, it would represent a much more attractive field of activity for the kind of high grade workmen which we want and must have.

Inasmuch as machine tools are not commodities used by the masses of our population, there is no natural, fairly constant consumption which will permit of reasonably constant production. Therefore our industry must try to work out some method of stabilization.

I might mention here that even manufacturers of consumer goods today are seeking for more stabilization of production than is attained through naturally favorable economic forces which operate in their behalf. Recently one of our well known Cincinnati industrialists who is engaged in the manufacture of a commodity of which everybody "uses up" a certain amount several times a day, told me that when his business drops off seasonally, he still continues to keep his full force working. His company has provided ample storage facilities to take care of the resulting temporary surplus during the slump. By the time the slump ends, his dealers' stocks have become depleted and must be replenished quickly to take care again of normal customer demand. This replenishing is effected by drawing goods out of storage, without upsetting normal production.

Building for Stock Is Risky

There was a time in years gone by when machine tool builders sometimes "took a chance" and manufactured quantities of machines and current model parts for stock during dull times thus keeping many of their men employed. That procedure would be altogether too hazardous under modern conditions however. Engineering developments now occur so much more rapidly and violently, and many of our customers have gotten so much into the habit of demanding machines which depart in one way or another from standard designs, that most of us dare not stock anything in any quantity, other than repair

parts for previous model machines.

The machine tool industry because of its peculiar character can never hope to attain absolutely even employment but it should at least be possible to better the situation somewhat. I am personally convinced that if all the manufacturers would co-operate toward that end something worthwhile could be accomplished. However, this would necessitate manufacturers overcoming what can only be expressed by a hard, nasty word—selfishness.

To illustrate just what I mean by this let me picture what happened in 1937 and immediately thereafter. Orders poured into and deliveries poured out of every business house. New Deal statistics to the contrary notwithstanding there actually was a grave shortage of skilled labor. Industry had learned, through bitter experience, the folly of price cutting. Hence the price situation had been fairly well stabilized—the trend being upward. Regardless of any upward price trend, orders continued to pour in.

Forced Delivery Killed Boom

Unprepared for such a sudden load, more conservative companies did the sensible thing and lengthened their deliveries. Thereupon some of their impetuous competitors—seeing a possibility of snatching some of this business without resorting to price concessions—immediately quoted shorter deliveries.

Thus it was that "Delivery!" became the business theme song of the period. Overtime work became common, despite the fact that the shortened work-week achieved through governmental action was expected to curb such order grabbing by discouraging inflated production schedules. Unfortunately for the best interests of business, most companies managed to make money during that hectic period.

But selfish interests milked the market too hard and finally the inevitable happened. Business, through its crazy anxiety to "get it all while the getting was good," suddenly discovered that it had milked its markets prematurely dry.

Here are my thoughts on a much less selfish, and at the same time much more safe and profitable course of action, over the long run. At a time when business is getting better and machine tool orders are actively in prospect it would help the situation greatly if manufacturers would not quote deliveries for the very shortest possible time just for the sake of getting all the business as quickly as they can get it.

Suppose that in such circumstances manufacturers would look a bit further ahead, planning production over a longer period and planning it more methodically.

August H. Tuechter
President
The Cincinnati Bickford Tool Co.
Cincinnati

Suppose that no manufacturer would quote "immediate delivery" on any machine tool — even though he might, by working under "forced draft," be able to give it. Suppose that he made a uniform practice of quoting delivery of say at least 30 days ahead. Certainly this plan would make for more even employment throughout our industry, if all would "play ball."

Many years ago a president of the National Machine Tool Builders' association, in an address at one of our conventions, advocated something along this same line. At that time his suggestion was considered by many to be radical so I suppose that some will still feel the same way about mine. Nevertheless I am firmly convinced of the merit of the plan. I must emphasize again however that it can only be worked out successfully through complete and hearty co-operation of all members of our industry, and that means overcoming all selfish motives.

Users Should Budget Purchases

Another thing which would go far toward helping our industry to stabilize its employment would be for all large buyers to adopt logical buying budget systems such as a few of them already have successfully in operation. I know of one company which is a very large buyer of machine tools which for a number of years has been following a budget buying policy—not only setting up yearly budgets but also breaking these down so as to provide for regular month-by-month purchases throughout the year. This program is proving of distinct value to the company in question and it certainly is greatly appreciated by our industry.

Success of any such budget plan of course is predicated upon the setting up of equipment replacement funds and actual spending of these funds for equipment replacement—a condition which unfortunately is none too general in the field of metalworking. The writer has seen all too many plants whose equipment is so superannuated and run down that production cannot possibly be anywhere near what it should be in quality, quantity or cost. Almost invariably the men in charge of operations in such plants are keenly aware of the need for new and up-to-date machine tools. The trouble usually is that those who hold the purse strings refuse to release the necessary funds for new equipment —assuming that any such funds ever have been set up.

If machine tool users would be broad minded and honest with themselves on this matter of equipment replacement they would find themselves in much better shape to handle their manufacturing operations efficiently and profitably. At the same time our own problems of fluctuating employment would be much less serious then they are under existing spasmodic buying.

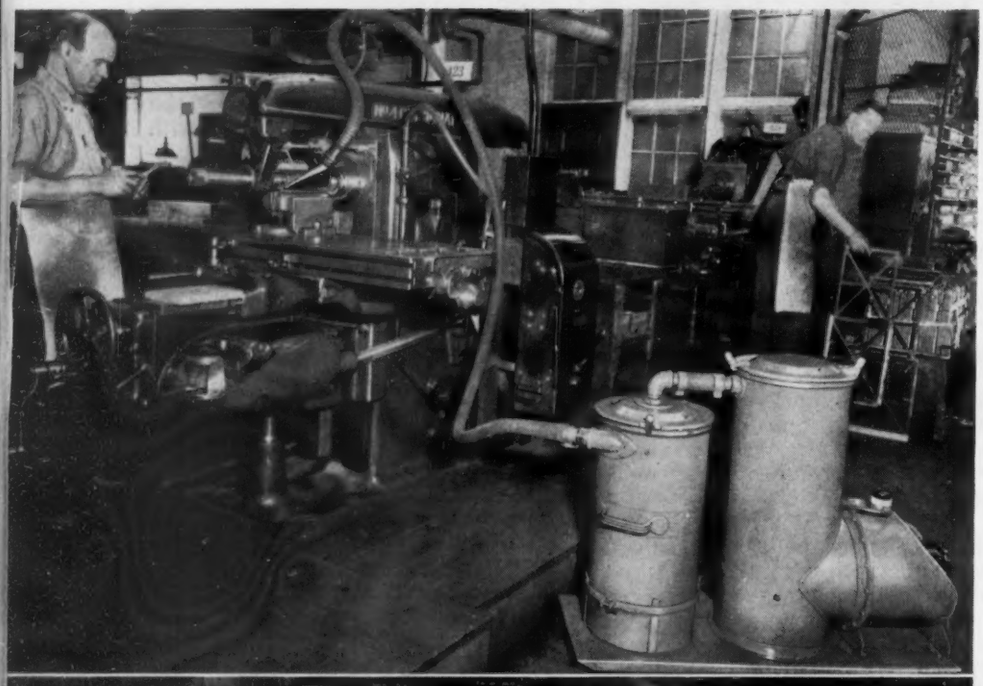
Rush Orders Are Bad Business

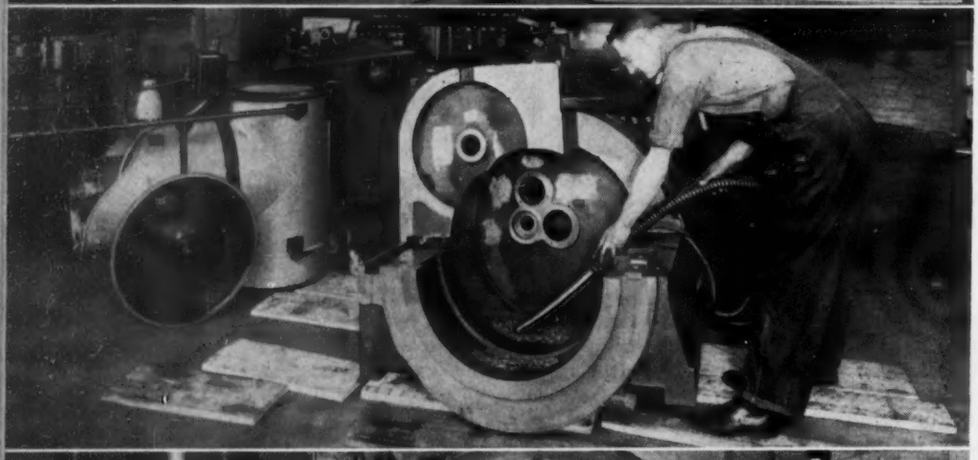
Ordinarily there is little or no excuse for a rush order for a machine tool. Except in rare instances executive heads of a company realize in good season that new equipment is going to be needed. Their production men usually are far sighted enough to make their recommendations to the management well ahead of time. But for some reason or other, management persists in holding up these requisitions until the last minute. Then what should have been a routine transaction becomes a rush order, demanding overtime labor, hasty execution of special engineering and difficult tool work which should have plenty of time for its proper handling, and also involving costly shipments.

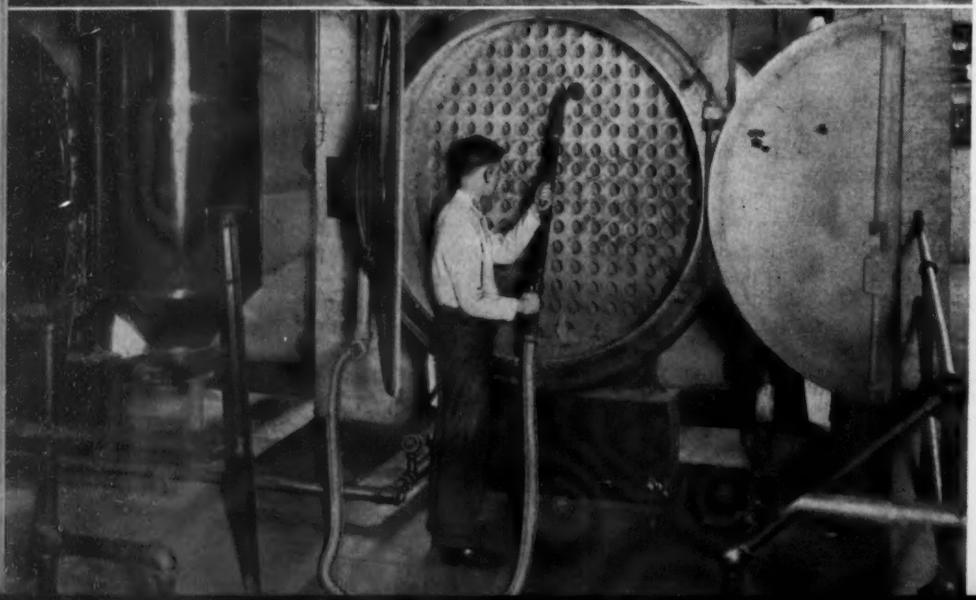
The net result is that the buyer actually pays more for a hastily finished and hastily tooled machine than he otherwise would pay for a carefully executed job. Worse than that, he loses the use of this machine during the critical period between the time when "he must have it" and the time when the hard pressed machine tool builder—often through almost superhuman efforts—does make delivery.

Common sense would seem to indicate that repeated emergencies of this kind just don't make sense. At least they don't to me as a machine tool builder of more than 50 years' experience in trying to cope with them. My only possible conclusion is that American machine tool users and American machine tool builders, by working reasonably together, can to a large extent eliminate this ridiculous state of affairs, to the decided economic benefit both of the capital and labor interests.

Installation of modern plant cleaning equipment not only improves working conditions and aids safety but in more than one instance has been followed by a direct increase in production







PLANT H

■ IN ANY plant, keeping machines and buildings clean is a most important portion of the plant housekeeping program. Spencer Turbine Co., Hartford, Conn., has made a number of developments which greatly facilitate keeping the plant and machinery clean.

A good proportion of older plant methods of cleaning involve simply removing the dust from pipes, walls and machines with brushes and sweeping the floor with the hope of removing the dust from the area.

Figs. 4, 5, 6, and 7 illustrate modern methods of doing these jobs. A stationary vacuum cleaning system, consisting of a vacuum producer and a dust separator, is located in a central position in the plant. From here, pipes run to inlet valves conveniently placed on each floor. Using a light-weight flexible hose and a set of vacuum tools as illustrated, conveniently permits cleaning all kinds of equipment in an efficient manner.

Portable Cleaners Used

Portable units containing all the above equipment in condensed form and using the same tools also are made in sizes from ¾ to 7½-horsepower. The stationary systems are made in sizes up to 100 horsepower. Also, combinations of stationary piping systems and portable units are frequently used.

Upper righthand illustration shows a convenient way of cleaning floors efficiently using a tool equipped with a brush. A cylinder tool also is shown being used in Fig. 4 to clean dust and dirt from overhead piping. Fig. 5 illustrates meth-

Fig. 1. (Top)—Vacuum unit on skids collects metal chips from milling operation. Fig. 2. (Center)—Machine tool builders easily clean castings before assembling the units. Fig. 3. (Bottom)—Cleaning boiler tubes is one of the newer uses for vacuum systems

By R. A. BRACKETT
Spencer Turbine Co.
Hartford, Conn.

T HOUSEKEEPING

od of cleaning walls. A wide variety of tools also is available for use in cleaning machinery of various types.

An adequate vacuum-cleaning system easily handles surprising amounts and types of dust and litter. While there are at least a dozen kinds of factory floors and hundreds of kinds of dust and litter, a powerful vacuum will clean all kinds of material from any kind of floor satisfactorily and at low cost.

These systems easily pick up coal dust, silica sand, oily sawdust, soapstone dust, cotton, lint and even metal chips, bolts and nuts. The only limitation is that the size of material must be such as to pass through the hose and cleaning tool.

A vacuum-cleaning system can be used to clean the floors during work hours, as it works so fast that it does not interrupt production. Similarly, such a system can clean up a surprising amount of debris during noon or between shifts. Savings in time alone on floor cleaning usually justify the cost of the vacuum-cleaning system. A 25 per cent saving in cost of cleaning floors can usually be obtained.

An ounce or dust overhead may be far more dangerous than a pound of dirt and debris on the floor. Dislodged by vibration, drafts or by its own weight, it eventually comes down on the raw material, working process or finished goods. A vacuum system permits easy removal of overhead dust and also greatly reduces the amount of dust on overhead surfaces by completely removing dust from the floor so there is little to float around and settle on overhead surfaces.

Special Units Available

Today there are available many specially designed tools for overhead cleaning, varying from a small hand tool to many types of brushes used at the end of extension handles which will reach as far as 12 or 15 feet from the operator. Usual savings in cleaning overhead equipment with a vacuum system amount to approximately 50 per cent.

Apparently there is no limit to the tonnage or volume of material that can be handled by modern vacuum systems, provided, of course, that the debris is of such size that it can pass through a 1½ or 2 inch hose. Applications range all the way from cleaning sand from castings in foundries to reclaiming chips of solder in automobile body plants.

Such a unit quickly cleans around core-baking ovens and similar equipment normally constituting a cleaning problem of considerable difficulty.

In one installation, a bushel of soapstone dust is removed from floor of a wire mill every hour or two. Thus, use of vacuum system means that the operator of equipment does not have to pick up or remove debris around his machine. It permits midday cleaning to be performed in rooms having heavy accumulations of litter without waiting for the plant to shut down at the end of the day. Thus, the shop can be kept just as clean as desired at all times, regardless of production conditions.

In foundries, vacuum systems are a great aid in removing material from molds and patterns. Instead of blowing out with compressed air, which only distributes the dust again, gathering and removing the dust from the area affords a more logical system. A principal advantage is the fact that work can be done during regular hours. Such equipment greatly reduces health hazards in industries where dust is an important factor, as in foundries.

Vacuum-cleaning equipment lends itself to many special applications.

From left to right these illustrations show modern methods of cleaning: Overhead structures, Fig. 4 at extreme left; walls, Fig. 5 next; machinery and equipment, Fig. 6; electrical machinery, Fig. 7 at extreme right

For instance, machine tool builders have found them valuable in cleaning castings before assembly. In an enameling plant, vacuum stencil brushing is used to great advantage. See Fig. 11. Use of insulated vacuum tools permits cleaning high voltage electrical equipment with no hazard to operator or equipment.

In other applications, vacuum systems are used to pick up water from the floor, to fish out steel chips from engine boxes, to clean radio loud speakers, etc.

It is common practice to provide a vacuum line alongside the air line in many plants as the obvious use of a vacuum to pick up or hold work in process is being utilized in many plants. One manufacturer uses a vacuum system continuously to remove dust from the inside of glass tubes. A machine tool manufacturer greatly improved a delicate milling job by removing the chips at the tool point as shown in Fig. 1. A watch manufacturer reclaimed enough gold from cracks and crevices to pay for a special system in a year.

The possibilities of such reclamation appear unlimited. Materials being reclaimed by systems already in use include molding sand, babbitt and solder, ground rubber and fuel of various types. Similarly, emery dust, copper dust, lead dust, gold dust and other material are being reclaimed in various plants.

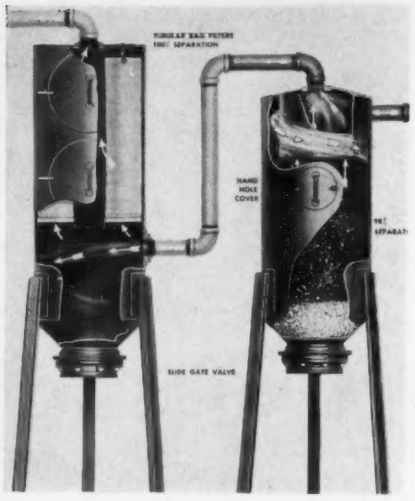
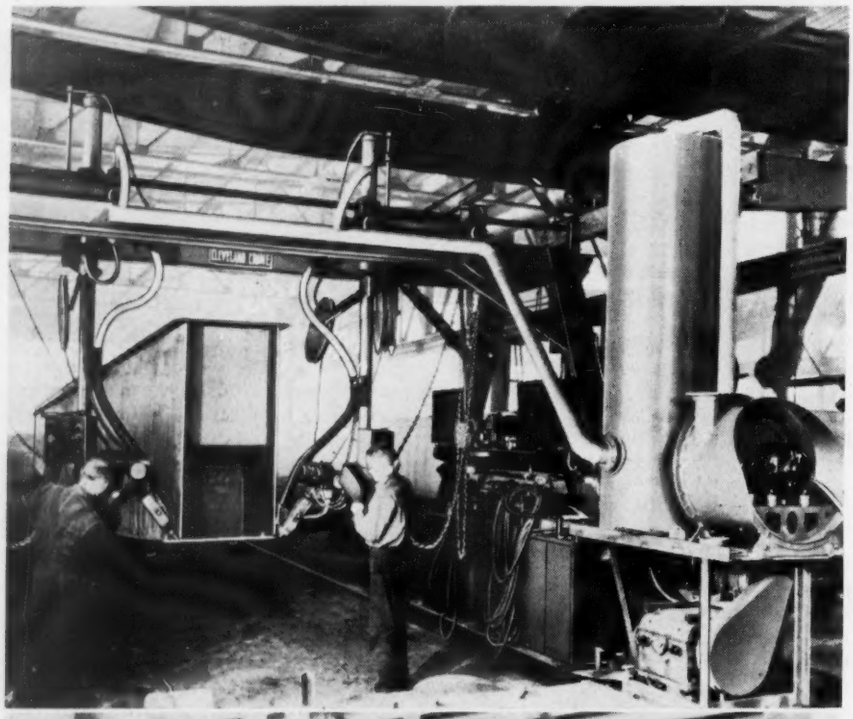
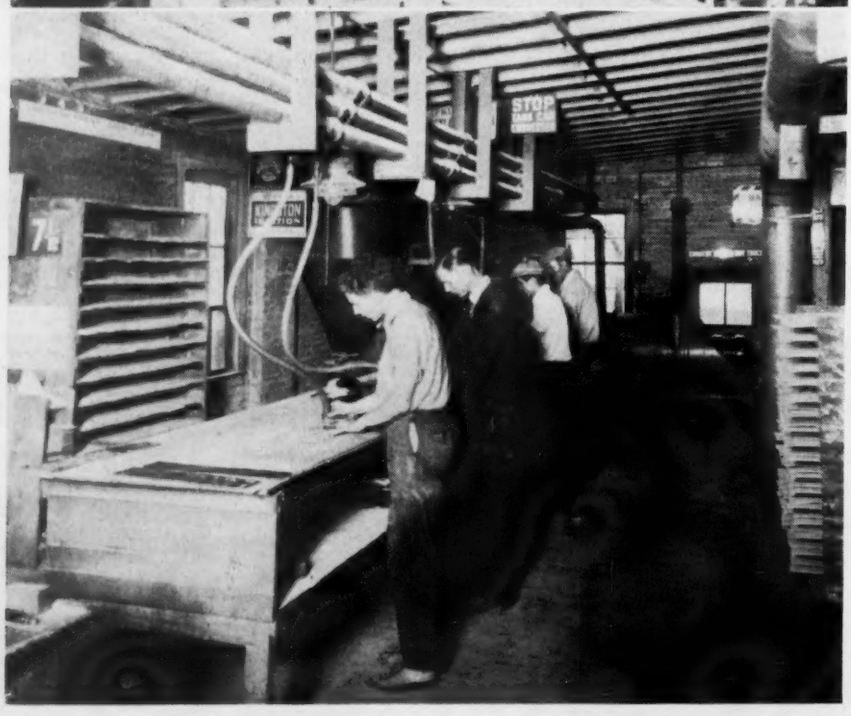


Fig. 9.—Combination of a primary centrifugal separator and a secondary bag type separator is shown here. Both have hopper bottoms with ball bearing slide gate valves for easy emptying





In hundreds of plant processes, the machine, die or tool is "blown" out after each operation. Vacuum applied either as a hand tool or through a fixture does a better job and prevents blowing the dust all over the shop. Life of electric motors, for instance, is greatly increased by periodic and thorough cleaning to remove accumulations of dust, which affect insulating value of the motor windings. See Fig. 7.

Many plants maintain their own boilers either for heating, or power, or both. Use of a special tool with a vacuum system permits efficient cleaning of boiler tubes as shown in Fig. 3.

Many Savings Effected

Cost of cleaning machinery by using a vacuum system is said to average a reduction of around 70 per cent compared with usual methods. In addition to saving 25 per cent in cleaning floors, 50 per cent in cleaning overhead equipment and 70 per cent in cleaning machinery, there also is a saving due to reclaiming valuable materials; elimination of defects due to dust; reduced fire, explosion and health hazards; and a saving in fuel by use of clean boiler tubes. These may add up to

Fig. 10. (Upper)—Fumes from welding processes are collected efficiently with a vacuum unit. Such units may be made acid proof if desired. Fig. 11. (Lower)—Here vacuum stencil brushing is being done in an enameling plant using standard vacuum system

significant figures in many a plant.

A test made in a wire mill showed that one inexperienced man covered 5700 square feet of floor per hour. Experienced operators would do 10 to 20 per cent more, it is estimated.

A vacuum system may consist of a stationary motor-operated vacuum producer, its separator and a piping system leading to vacuum inlets throughout the building. In this type of equipment, a multistage turbine with extra wide clearances throughout is used. In the majority of cases, no cloth bags, fine screens or similar devices are required as the specially designed centrifugal separator, at right in Fig. 9, is usually sufficient as it collects from 95 to 98 per cent of the dirt and the little fine dust remaining can be discharged through the exhaust outside the building.

Use of several impellers in series makes it possible to obtain any desired volume and vacuum with low peripheral speed. Also, it is characteristic of such a machine that the vacuum remains constant regardless of changes in volume.

Portable equipment has the advantage of lower first cost and also is readily moved about from one department to another. The trend during the past few years, however, indicates that eventually vacuum will be piped throughout the plant for continuous service and be available all over the plant for cleaning as well as other services, just like water or compressed air.

•

Semibright Nickel Alloy Electroplate

■ To bridge the gap between bright nickel and grey nickel deposits, a soft, semibright nickel alloy electroplate has been developed by Hanson-Van Winkle-Munning Co., Matawan, N. J. The new soft coating is nearly as bright as the typical bright nickels, yet it flows under pressure on a buff much more easily than either standard grey nickel or bright nickel. Only the lightest "fanning off" on a loose, medium-speed buff is required to give the deposit a fine deep lustre. Light pressure on wheel eliminates danger of cutting through deposit on corners and projections.

The deposit has excellent adherence, even when deposited directly on iron or steel. It will stand mechanical forming operations without flaking or peeling. Under properly controlled conditions, this deposit on buffed copper or brass may be lustrous enough to go directly into the chromium tank without buffing, but average practice calls for heavy deposits at high current densities followed by a light coloring operation before chromium plating. The salt spray resistance of the deposit is excellent. It will take chromium plate without extra treatments.

The electrolytic used is an adaptation of the Weisberg and Stoddard cobalt-nickel solution. The nickel anodes are of the cast carbon type, containing a small percentage of cobalt. The solution operates between 2 and 4 pH, at temperatures between 140 and 180 degrees Fahr. Brightness of deposit is increased by using higher temperatures with lower pH values. Maximum brightness is obtained by agitation, although agitation is not indispensable. Throwing power of the solution is best at higher pH levels. Current densities as high as 75 and even 85 amperes per square foot can be employed by use of proper racks and sufficient agitation. Brighter deposits are obtained at the higher current densities.

Savings are realized by the reduction in buffing labor, buffs and compositions consumed in coloring deposit. Fewer polishing operations are necessary before plating, with ing. Cost of operating the solution is considerably less than that for the same lustre after nickel colorbright nickel.

Enamel Simulates Metal

■ To reduce highlights and off-color combinations, Porcelain Enamel & Mfg. Co., Baltimore, has developed satin finish porcelain enamel which does not require a mill addition of silica or any other dulling compound and fires out at an even (semi-matt) finish over entire surface. It tends to reduce slight imperfections such as accompany irregular spraying or burning and, due to reduction of highlights, it makes stamping or forming defects less noticeable.

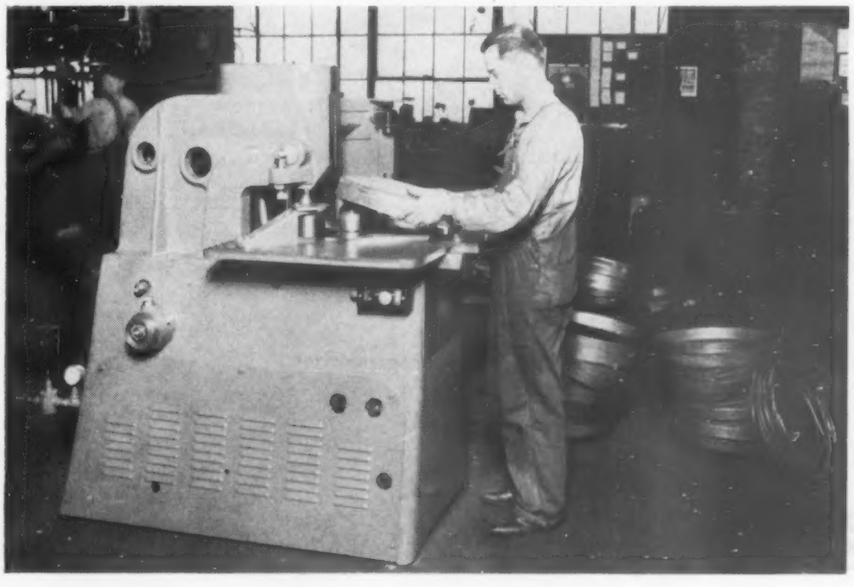
Adds Electric Eye to Control Trimming Unit

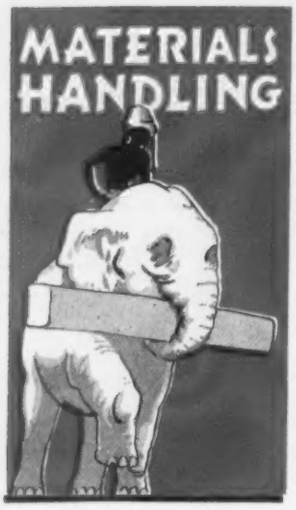
■ A changeover from foot-pedal operation to photoelectric relay control has stepped up the working capacity of the stamping trimmer and forming machine manufactured by Quickwork Co., 2313 Chicago Daily News building, Chicago.

In the previous design operator actuated a pneumatic air cylinder which opened and closed the rolls through foot-pedal control. An electric eye has replaced the former arrangement. Light source and photoelectric relay are shown in the illustration just beyond the operator's right hand. In straight production, operator has simply to remove trimmed stamping, insert another and pass his hand through the electric beam. Simplicity of this operation enables him to stand firmly on both feet at all times. Electrical equipment involved in the new control is housed within the base of the machine. Arm carrying the electric eye can be swung away from the table and rolls if convenient in changing setups. The electric eye was built by General Electric Co., Schenectady, N. Y.

This trimmer is a rotary shear with cutters mounted on vertical shafts. The work being trimmed remains in a horizontal position on the table top. One cutter is moved to and from the other to enable operator to load and unload the machine. Cutting speeds vary from 10 to 60 feet per minute, depending on the kind and size of the stampings.

Operator is shown loading the electric eye-controlled, semiautomatic trimming machine. He simply places stamping on the rolls and passes his hand through the electric beam; rolls close and at completion of cut machine opens





Making Wire Rope

Due to necessity of repeating cycles in processing wire, equipment is placed so material follows circular path through successive cycles thus giving shortest possible distance between processing points and maximum efficiency in handling product through the plant

By R. B. WHYTE
General Superintendent
Macwhyte Co.
Kenosha, Wisc.

■ MANUFACTURE of Macwhyte wire rope and wire rope slings does not lend itself to straight line handling operations because of the successive series of heat treating, pickling and drawing operations which must be repeated a number of times during manufacture of the cold drawn wire constituting the material later made into wire rope. Equipment is arranged, however, to follow a circular path through the successive operations permitting maximum handling efficiency as the cycles are repeated.

All types of wire rope are made at the Macwhyte plant including those of stainless steel, phosphor bronze, monel metal and zinc coated steel wire. However, due to the comparatively few applications of wire rope of these materials, the larger portion of material fabricated is bright, cold drawn, high carbon, steel wire of various grades. These are made in many types of standard and special ropes for use in mining, drilling, excavating and logging service as well as for elevator cables, highway guard rails, etc.

Production of wire rope in this plant starts with receipt of coils of rod direct from the steel mill. Rod is made to Macwhyte specifications and a sample is taken from each end of each coil of rod for a careful check on physical, chemical and structural characteristics. The six general classifications of rod received are commonly referred to as iron, traction steel, cast steel, mild plow or extra strong cast steel, plow steel and improved plow steel. The difference between each grade lies in tensile strength which increases successively from iron to improved plow steel. This material is received at the plant in closed box cars on a siding as shown in Fig. 1.

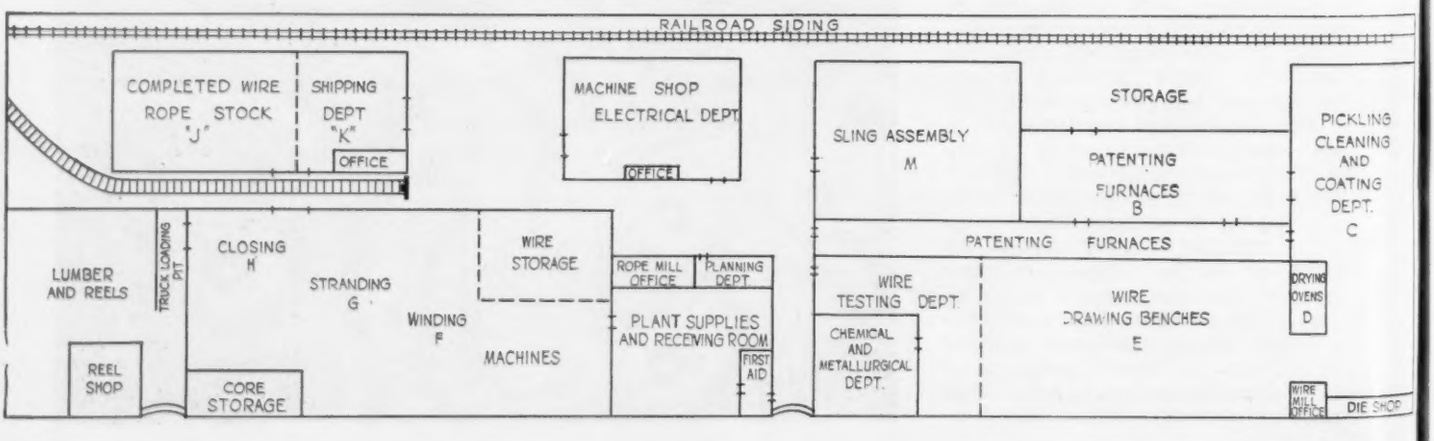
Fig. 1—Layout diagram showing processing departments at the Macwhyte plant, Kenosha, Wisc.

After being checked, rod is moved into the wire mill at point A or B, Fig. 1, where it is given a heat treatment.

For production of highest quality wire rope, the Macwhyte plant employs their own wire drawing facilities for more complete control of the operation. The ability to cold draw steel to the extent necessary to obtain the required physical characteristics in the finished wire depends in a large measure upon uniformity and type of its grain structure. For this reason, raw material is first given a patenting treatment prior to drawing to produce proper grain structure for most efficient cold drawing, especially in all rods containing 0.55 per cent carbon or more. In case of rods having a carbon content of from 0.25 to 0.50 per cent, preliminary patenting is not entirely necessary although it is employed here for maximum uniformity.

Below 0.25 per cent carbon, preliminary patenting is not required because of the relatively high ductility of the material.

Patenting in this plant is done in



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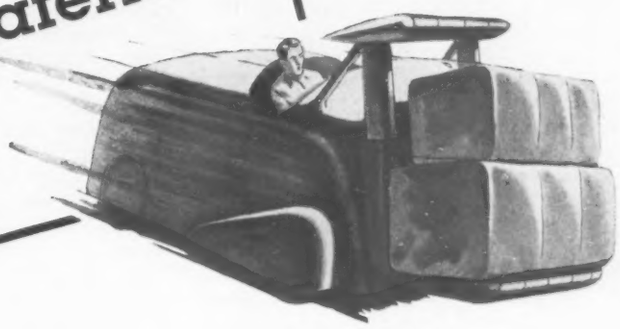

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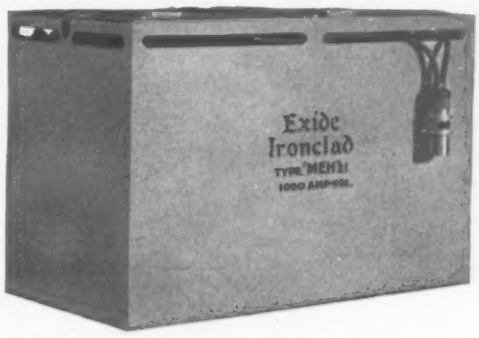

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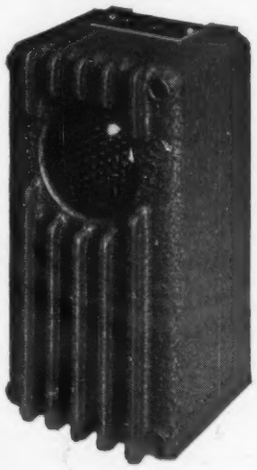

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four 50-foot furnaces of the gas-fired type with the wire or rod running continuously through the furnace and being quenched from maximum patenting temperature which ranges from 1800 to 1830 degrees Fahr., Fig. 3. Each furnace is complete with handling equipment for uncoiling and recoiling the rod or wire. One furnace handles a maximum of 48 wires or rods simultaneously, two other furnaces handle 56 pieces of material at one time, and the fourth furnace is arranged to handle a maximum of 60 wires or rods.

Drives to handle this large number of wires or rods in one furnace form an important part of the equipment. Reels on which the coils are placed prior to going into the furnace are at one end with all wires passing through a series of guides and out to power-driven reels or hauloff blocks at the opposite end of the furnace.

Hauloff blocks are driven in sets of four to eight, variable speed transmissions being employed to provide the required speed range. Since wires or rods of various sizes may be going through the furnace at the same time, it may be desirable to use different linear speeds through the furnace so the recoiling drives are broken up into groups. Patenting operations proceed under strict control to produce the exact grain size and structure desired.

Scale Removed

After rod has been treated in one of the four furnaces, the scale formed on the surface during heat treatment is removed in sulfuric acid pickling baths which are maintained at a temperature between 100 and 140 degrees Fahr. This completely removes scale and impurities from surface of the rod or wire. From the pickling bath, rod or wire is given a hydrated iron oxide, or sull, coating. Of course the rod receives several rinsing operations. Sulfuric acid solution ranges from 7 to 12 per cent strength. An inhibitor minimizes action of the acid on the steel itself and eliminates danger of overpickling.

Since cold drawing is done dry, the stock is given a sull coat and, in some instances, a copper coat by immersion in an acidified solution of copper sulfate. Following application of sull or copper coat, stock is limed and subjected to baking in an oven after which it is ready for cold drawing. The drying oven is maintained at a temperature of 300 degrees Fahr. using gas for fuel. Air is circulated by a large fan to facilitate drying.

Fig. 2—Closeup view of wires passing through lubricant and entering stranding die of stranding machine shown in Fig. 5

Size of rod as received from the mill includes some ½-inch, 5/16-inch, 9/32-inch material but with a larger proportion of No. 4 and No. 5 rod. The rod is cold drawn and reduced in section from 65 to 90 per cent before the material must be heat treated again to give correct grain size and structure for subsequent drawing.

Wire Given Consecutive Draws

The patented or hot-rolled rod first is drawn to the size at which it is to be heat treated, using one or more tungsten carbide dies. After pickling, coating and baking treatment, it is ready for drawing again. Subsequent wire may receive up to as many as a maximum of nine consecutive draws in continuous drawing mills as illustrated in Fig. 4.

Since wire-drawing operations with their intense amount of cold work tends to harden the wire, only a certain amount of drawing can be done at one time, after which it is necessary to anneal or patent the wire with correct type of heat treatment before additional drawing can be done. This means the path of work in the mill roughly follows a circle through points A, B, C, D, and

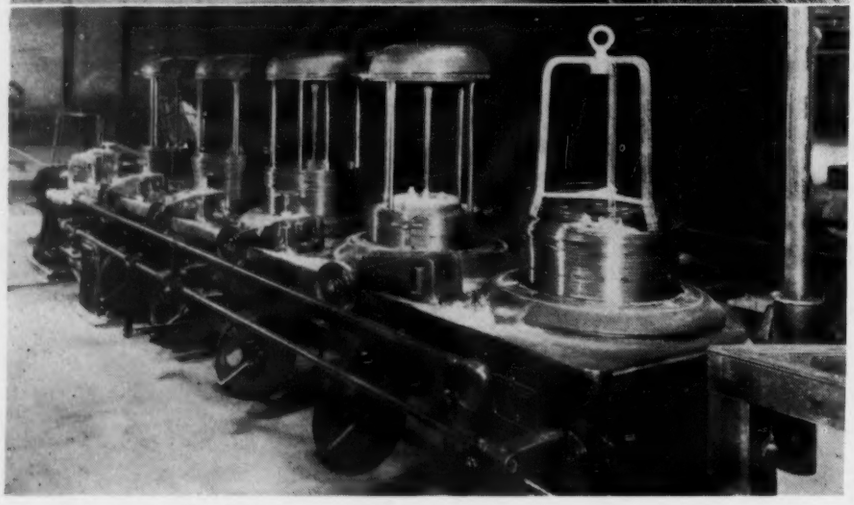
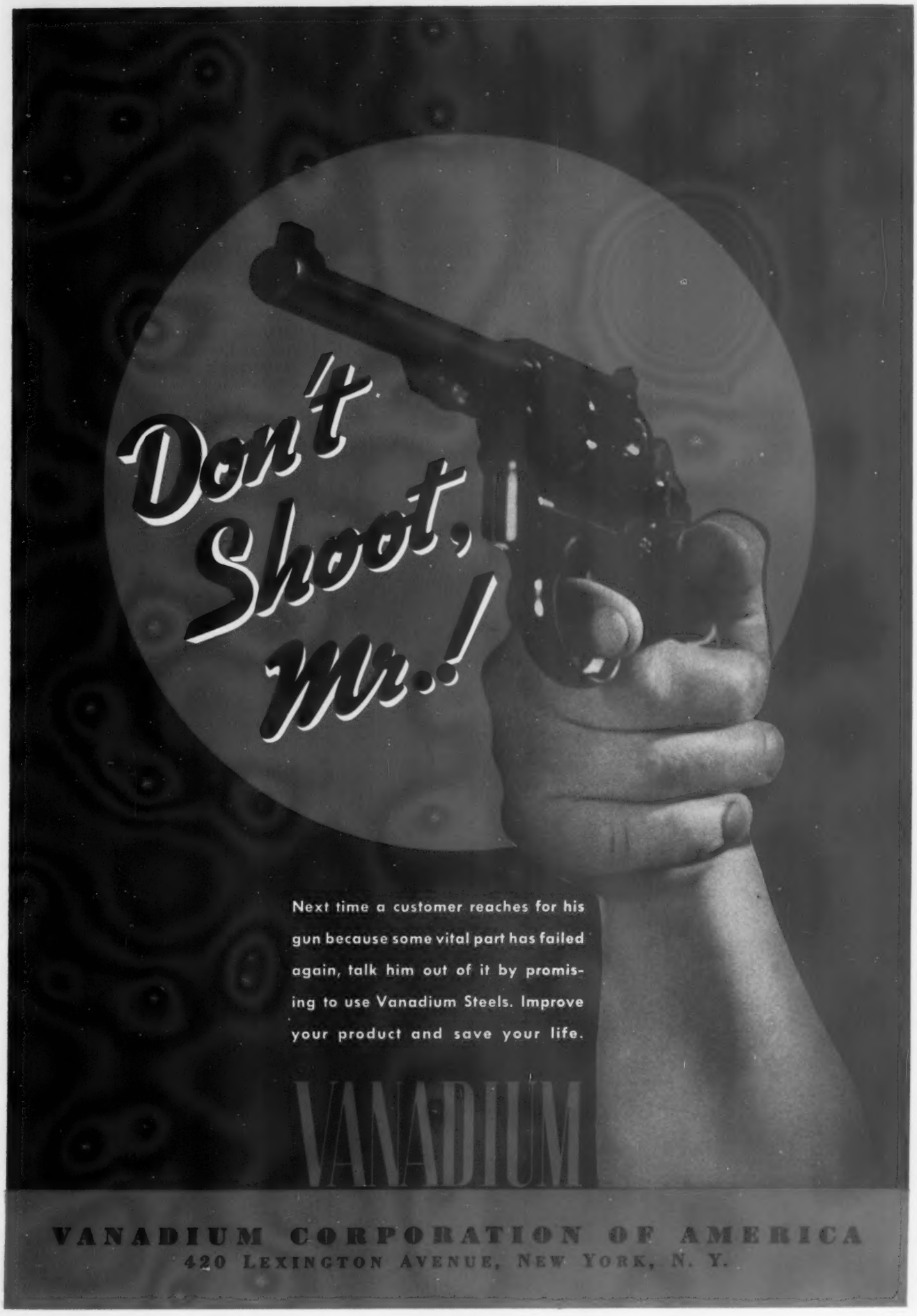


Fig. 3. (Upper)—Multiple strand patenting furnaces like this handle up to 60 wires or rods simultaneously with windup reel speed adjustable through variable speed transmissions in groups of 4 to 8 reels. Fig. 4. (Lower)—Wire subsequently receives as many as nine consecutive draws in continuous drawing mills like this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420 LEXINGTON AVENUE, NEW YORK, N. Y.

E in Fig. 1 for each cycle. The material may be passed through this cycle of operations from one to three times before reaching the desired size and physical characteristics required.

All of these operations are facilitated by overhead handling equipment employed to load and unload reels at the patenting furnaces, to immerse coils of wire and rod in the pickling, rinsing and coating baths and to load on trucks going into the drying oven.

At E, Fig. 1, are located 22 wire-drawing frames; seven of these are the single block type, the remainder being multiple block continuous design shown in Fig. 4.

Each coil of finished wire is checked carefully for grain structure and physical properties before being sent to the wire rope fabricating building. Each coil is carefully tagged after checking, each tag carrying notations giving size of wire, heat number, heat treatment, source of supply, tensile strength, torsion strength and the wire tester's mark. This permits careful control and provides means for checking back on source and processing of each individual coil of wire.

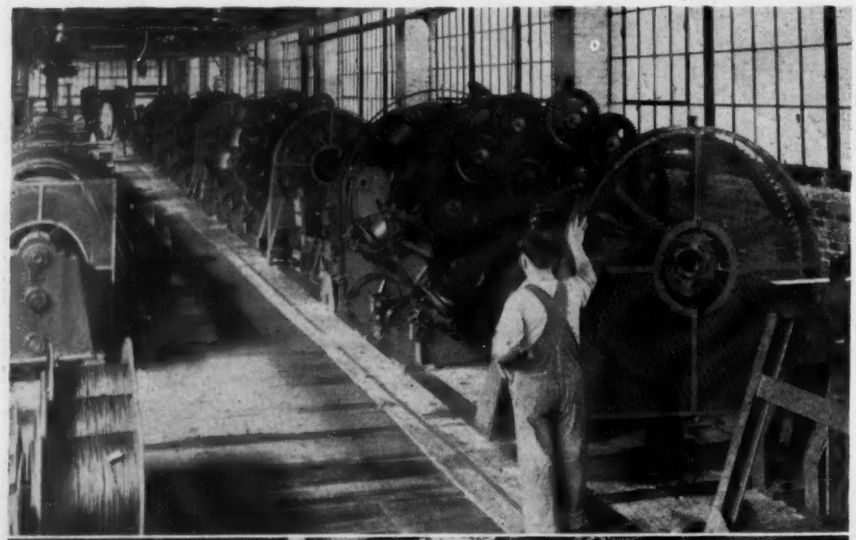
Tension Control on Reels

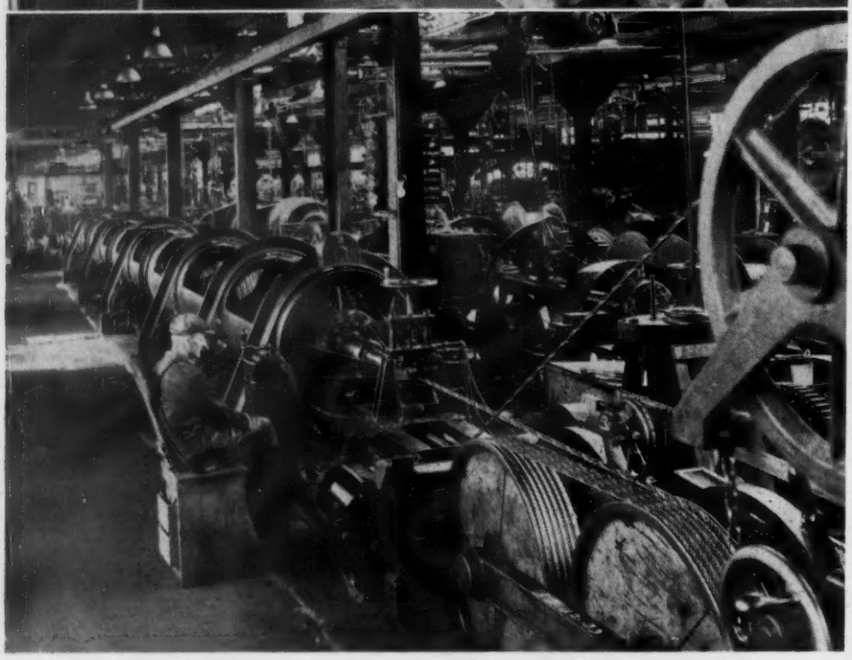
In the rope fabricating department, coils first are reeled carefully under controlled tension. This is essential to give uniform strand tension when the wires are subsequently stranded.

Fig. 5 shows stranding machine where each wire is lubricated as it is laid in its correct position in the strand. Insert Fig. 4A shows the wires passing thru the lubricant be-

(*Please turn to Page* 65)

Fig. 5. (Upper)—Row of stranding machines where wires are made into strands. Fig. 6. (Lower)—In this machine, the strands are assembled or "closed" to form a wire rope





Complete Statistics Of World Tin Industry

■ *Statistical Year Book of International Tin Research and Development Council*, 200 pages, 8 x 10½ inches; published by the Council, The Hague; supplied by STEEL, Cleveland; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London S.W. 1.

Development of the world's tin industry is traced from 1800, when output was about 8000 tons per year, to 1937 with production of 208,000 tons and 1938 when this was reduced to 148,400 tons.

Tin output by all producing areas since 1800 is shown, in some instances including production of individual companies. Industries consuming tin are also covered by the statistics, including tin plate, canning, solder, bronze, collapsible tubes, the motor industry and railroads.

Numerous graphs and tables illustrate the text and contain a wealth of comparative statistics for the tin industry.

Abrasion Test for Porcelain Enamels

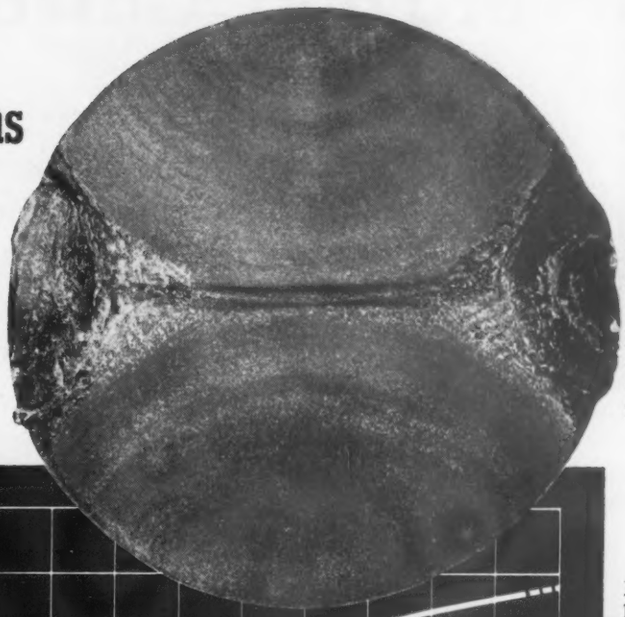
■ Development of a tentative standard test for abrasion resistance of porcelain enamels has brought to light wear-resisting qualities of various finishes or surfaces. The test, developed by Porcelain Enamel institute, 612 North Michigan avenue, Chicago, was conducted on flat specimens about 4 inches square. A standard weight of feldspar abrasive was placed on face of specimen in a cylinder and a standard weight of rust-resisting ball bearings placed in cylinder. Cylinder then was placed in a rotary screen shaker and agitated horizontally at a specified speed to produce the desired abrasion effect. Specular gloss of each specimen, determined by photoelectric means before and after test, was taken as the abrasion index.

Testing of much harder or softer materials to determine differences within a given class would make the use of correspondingly harder or softer abrasives desirable. To lose 50 per cent of original specular gloss, dinnerware required 9600 strokes; hard, acid-resisting enamel, 8700; medium vitreous enamel, 5500; polished plate glass, 4500; soft vitreous enamel, 3400; baked organic coating, 700 and soft organic coating, 400.

This abrasion resistance test may find application in the case of other materials having moderately smooth and glossy finishes, such as paints and lacquers and in many other instances.

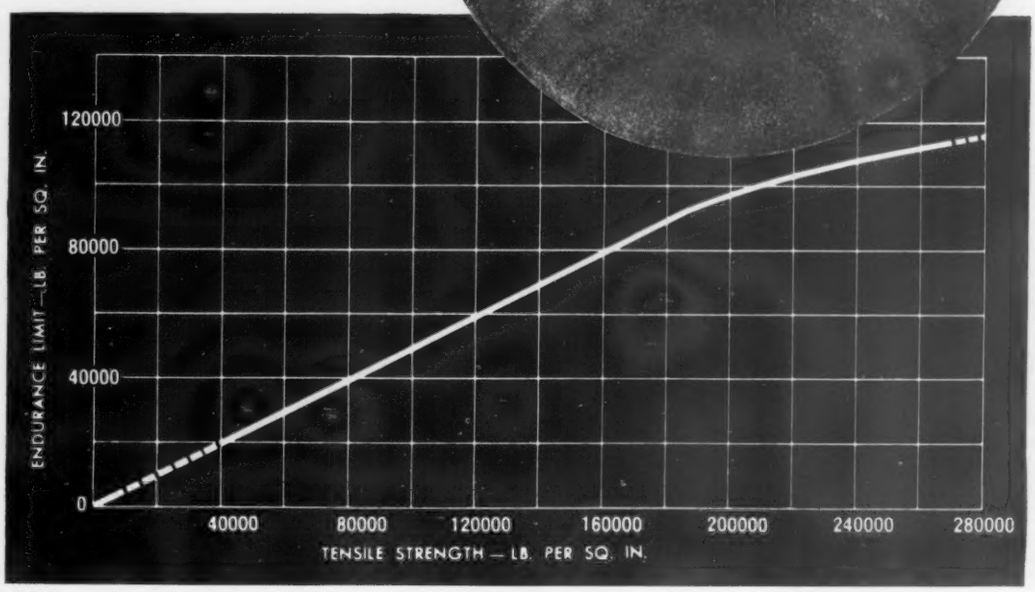
Fatigue Failures in Steel Parts

Mechanical conditions *versus* Fatigue strength



A typical fatigue failure. Points where fatigue started are easily recognizable.

Minimizing stress concentrations is the surest cure for this type of failure.



Relation of endurance limit or fatigue strength to tensile strength. Based on 220 laboratory tests on rotating-beam machines. These do not apply to service conditions, since specimens were highly polished and gently tapered to avoid localized stresses.

SERVICE failures in rotating or reciprocating parts are usually caused by fatigue. The question naturally arises as to whether a steel with high "fatigue strength" provides a solution.

WHAT CAUSES FATIGUE? Fatigue develops from the continuous repetition of stresses. However, experience proves that it is not calculated stresses which cause failure but rather high, localized stresses. These may be the result of such "stress-raisers" as shoulders, holes, or rough surface, or they may be the result of such service conditions as misalignment, overload, inadequate support, or corrosion.

CURE IS MECHANICAL. Since trouble always starts at points of stress concentration, the surest way to minimize failures is to correct the mechanical cause. No change of steel in itself can eliminate the cause of fatigue.

WHAT ABOUT "FATIGUE STRENGTH"? Some steels have a much higher fatigue strength or endurance limit than others. As the curve shows, the higher the tensile strength, the greater the endurance limit. This is based, however, on laboratory tests of polished specimens. In actual service, localized stresses are the important factor, and such stresses are more effectively dissipated in a ductile steel. Thus as long as stress-raisers are present, steel with high fatigue strength, being less ductile, will seldom help matters and may make them worse.

TACKLING FATIGUE PROBLEMS. First, causes of stress concentrations should be studied and every attempt made to minimize them. This is the only real cure. The steel should, of course, have maximum ductility combined with adequate strength. Good damping characteristics (dissipating internal energy as heat) are desirable. But high fatigue strength, except in very unusual cases, is not the major consideration. Bethlehem metallurgists will be glad to consult with you on fatigue problems. They can help you eliminate stress-raisers, help you select the proper steel. There is no obligation. You can reach these men by writing Bethlehem Steel Company, Bethlehem, Pa.

BETHLEHEM STEEL COMPANY

BETHLEHEM STEEL

Brazing Galvanized Pipe

One effective method of joining ends of galvanized pipe without damaging the adjoining galvanized surfaces is presented here. A new type of flux, recently developed, acts as a nonoxidizer and protects zinc coating during the operation

By **VALNORE FORGETT**

Pipe Welding Specialist
Air Reduction Sales Co.
New York

■ JOINING mill lengths of galvanized steel pipe end to end to make up pipe lines for water and other fluids has become a serious problem in plumbing, heating and air conditioning work. Screw joint method of connecting galvanized pipe continues to be used generally regardless of improvements in welding procedure connected with galvanized pipe. In welding, it is difficult to prevent burning off the galvanizing coating adjoining the weld, thus leaving an unprotected area each side of the joint. Hence there has been need of an improved method of making such joints in galvanized steel pipe.

Even in the screw thread joint, unprotected areas exist as screw threads on pipe are cut after the pipe has been through the galvanizing bath. Couplings and fittings, on the other hand, are galvanized after the screw threads are tapped. This means that no protection is provided on the male threads whether cut in the field or at the mill. Thus they are exposed to corrosive attack, and joint leaks are likely to appear in time.

Previous to development of a new brazing procedure, described here, braze-welding of galvanized pipe joints had been attempted, but some difficulty was experienced due to tendency of galvanized coating to become damaged from heat of brazing operation. While not as serious as damage resulting from welding, it nevertheless was far from attaining the perfect joint desired. Recent development of a new type of flux which acts as a nonoxidizer during brazing appears a successful solution to the problem. The action of this new flux when painted on the pipe is to prevent atmospheric oxygen from attacking the zinc while it is in the molten state due to heat developed during the brazing operation. In use, the flux is painted both on the inside and outside surfaces of the pipe near the end where the joint is to be made.

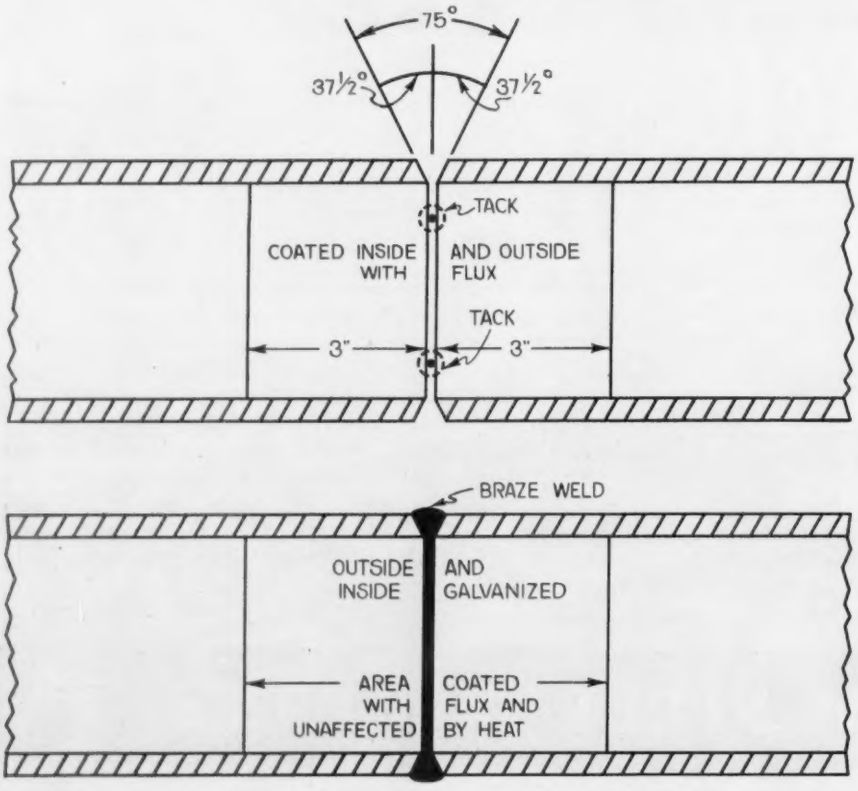


Fig. 1. (Upper)—Galvanized pipe prepared for braze welding, standard 3-inch size shown. Fig. 2. (Lower)—Here pipe ends have been joined by a braze weld without injury to the zinc coating on surfaces adjacent to the joint

Joint Is Strong

Tests have been made on joints in standard galvanized pipe properly brazed by this method in which a tensile strength equal to the strength of the pipe itself was developed in the brazed joints. Also, complete protection of the galvanized coating was accomplished and the coating preserved undamaged.

Procedure involved is not difficult. Pipe ends are beveled at the mill to an angle 37½-degrees, making an included angle vee of about 75 degrees. A land or shoulder of about 1/16-inch is provided as usual. The ends are spaced ⅛-inch apart when tacked into position for brazing as shown in Fig. 1. Prior to tacking the ends together, flux is applied for a distance of about 3

inches back from the end both on the inside and outside of the pipe The ends are spaced ⅛-inch apart when tacked. When brazing is completed, these are brought nearly together by the contraction of the material, with a thin film of bronze remaining between the pipe ends.

This method has been employed with great success throughout a wide range of sizes including galvanized pipe varying from 3 to 12 inches in diameter. It has successfully met strict government specifications. In making piping systems of galvanized material, galvanized welding fittings, of course, are used throughout the system.

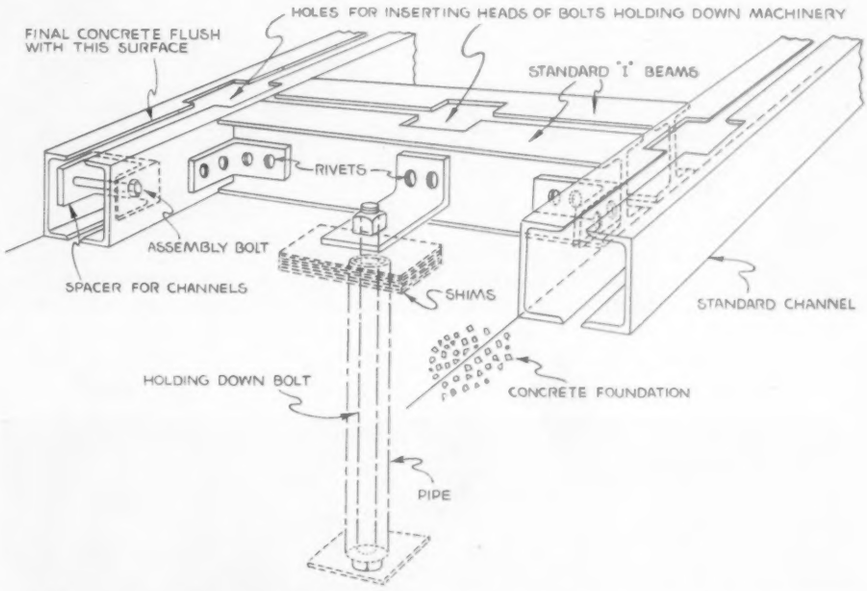
Close Tolerance Erection Floor From Standard Steel Channels

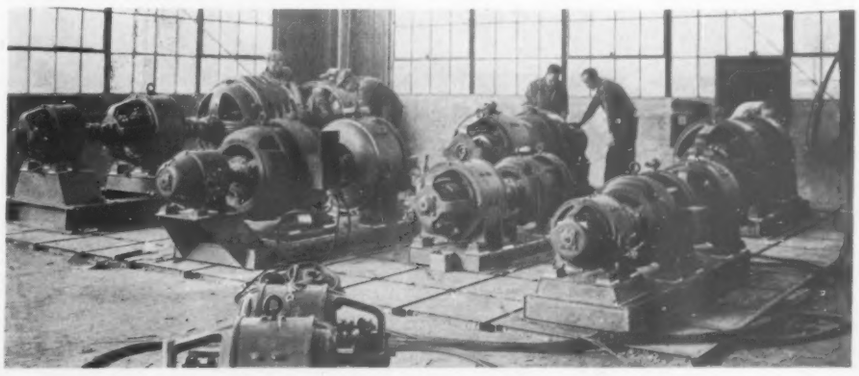
■ To aid in the erection and testing of large motor-generator sets at Reliance Electric & Engineering Co., Cleveland, an erection floor mounted on a concrete foundation was installed. Requirements of floor were that it enable effective bolting down of machinery in any position, that tolerance of planity be and remain 1/64-inch in spite of heavy undistributed loading to which floor would be subjected and that floor be isolated from vibration of shop floor proper.

Novel features of this floor are the use of standard shape channels and "I" beams and in way the floor itself was levelled. Reference to sketch will show how this was accomplished. From 3 to 4 feet of solid concrete were laid down to the shale underlying the soft clay of the region. Around this concrete there was placed about ½-inch of sand to help vibration isolation. Holding-down bolts were set into this concrete block approximately two feet apart. Pipes were placed around the holding-down bolts to permit a slight lateral movement of holding-down bolts when lining up with steel structure laid above them.

Steel structure was riveted in 2 x 20-foot panels in shop of supplier who assembled panels face down on a surface plate. The top side of panel came perfectly level while variations in structural members appeared on the bottom side which would be placed next to the concrete base. The 2 x 20-foot panels then were laid side by side and bolted together. No welding whatsoever was allowed anywhere on floor as this might have introduced distortion. Levelling was accomplished by a transit, level and a long straight edge. Shims were placed around the holding-down bolts and the whole base drawn down tight to meet the 1/64-inch tolerance of planity. To prevent truckers from running over it, the floor, 20 feet x 24 feet was raised 2 inches above surrounding shop floor. Frequent spacing of slots in both channels and "I" beams facilitate the placing and removal of bolts holding down machinery.

Although the structure has had severe use for almost three years it has suffered no perceptible unlevelling or misalignment. It is sufficiently isolated from shop vibration and has proven entirely satisfactory in the bolting down of machinery.





Above, structural detail of erection floor. Note how shims are used to get final leveling. Below, erection floor loaded with motor generator sets. Units are lined up on this floor

Patents and Influence On America's Progress

■ *Patents and the Public Interest*, by H. A. Toulmin Jr.; cloth, 205 pages, 5½ x 8½ inches; published by Harper & Bros., New York; supplied by STEEL, Cleveland, for $2.50; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S.W. 1.

This volume is a factual survey of the United States patent system and the author, in addition to describing actual problems that confront the public in the administration of the patent system, analyzes various proposals for reform and considers the practical results of such proposals.

Patents are shown to have such a vital bearing on America's economic life and our patent law to supply so much of the incentive for inventive genius that America's industrial leadership in the world can be explained in terms of it.

It is an authoritative discussion of current patent problems and constructive suggestions for easing and improving the role of the inventor and the system to which he looks for protection and reward. The author is well known as the author of several books on patents.

Improved Galvanizing

Modernization of sheet and galvanizing departments is followed by improved quality and larger output. Product also is more uniform. Special equipment designed for this work by plant engineers is described and illustrated

■ RECENTLY Inland Steel Co. completed a series of improvements in the galvanizing department of its Indiana Harbor plant. These have made possible not only greater production but significant improvements in uniformity and quality of galvanized sheet produced.

Flow of material through the sheet and galvanizing department roughly follows an elongated U. Material in the form of coils is received at the decoiler from the hot strip mill and is rolled on the sheet mills adjoining the galvanizing department.

Decoiler line handles coils with a maximum width of 54 inches and a maximum weight of between 6000 and 7000 pounds. Size of material handled by the decoiler ranges from 0.042 to 0.109-inch ordinarily, although the shear has a maximum cutting capacity of ¼-inch material. Near the end of the decoiler and shearing line, the strip breakdowns are stacked two or three high, depending on gage and doubled into packs. Doubler unit is particularly designed to produce an extremely flat fold. At the same time, the edges and ends of the pack are even and straight.

Each Sheet Weighed

A feature of the decoiler line which affords increased control of quality is a magnetic weighing device which weighs each sheet individually as it passes down the line. To weigh a sheet, the operator simply pushes a button which energizes a magnet which lifts the sheet from the table and registers its weight on the scale of a large-faced measuring instrument incorporated in the line. By checking weight of each sheet, it is a simple matter to adjust the length of cutoff to compensate for any slight variations in thickness of the coil. By making each sheet identical in weight and controlling length of sheet in subsequent rolling operations, it is much easier to control accurately the thickness of the finished sheet. Thus, this unit is a definite contribution to improved quality.

From the decoiling, shearing and doubling line, the material passes to a walking-beam pack heating furnace. There are four of these walking-beam furnaces, each identical in size and arrangement of equipment and each heats the material for one finishing mill.

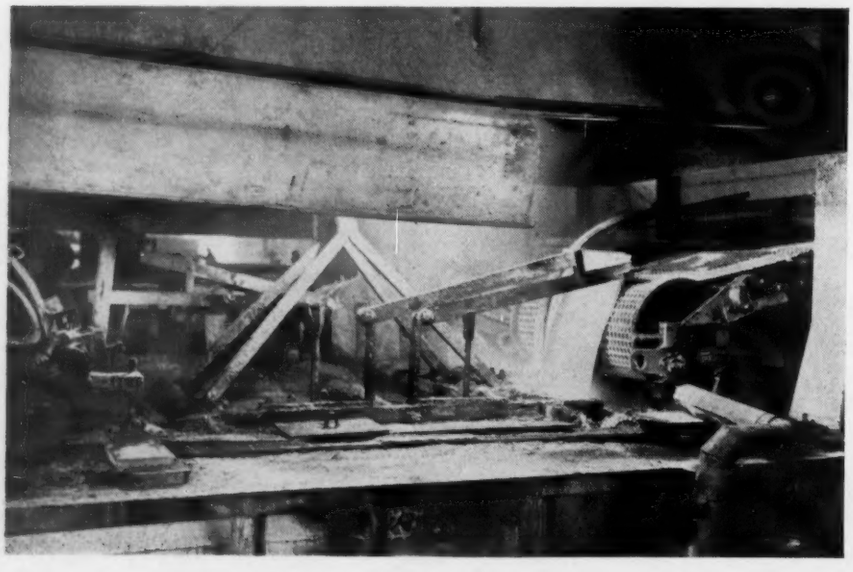
Each furnace is 55 feet long inside the heating zone and is designed to heat from one to ten tons of material per hour. Gas is burned as fuel with automatic gas-air ratio control. Material is both over and underfired. Those burners above the work are spaced from 28 to 32 inches apart and burners below are spaced on 5-foot centers. Burners are staggered from side to side, the entire arrangement being designed for uniform heating throughout the entire zone.

Discharge Is Automatic

Furnaces are equipped with automatic pack discharge mechanism and automatic length control to compensate for different pack lengths.

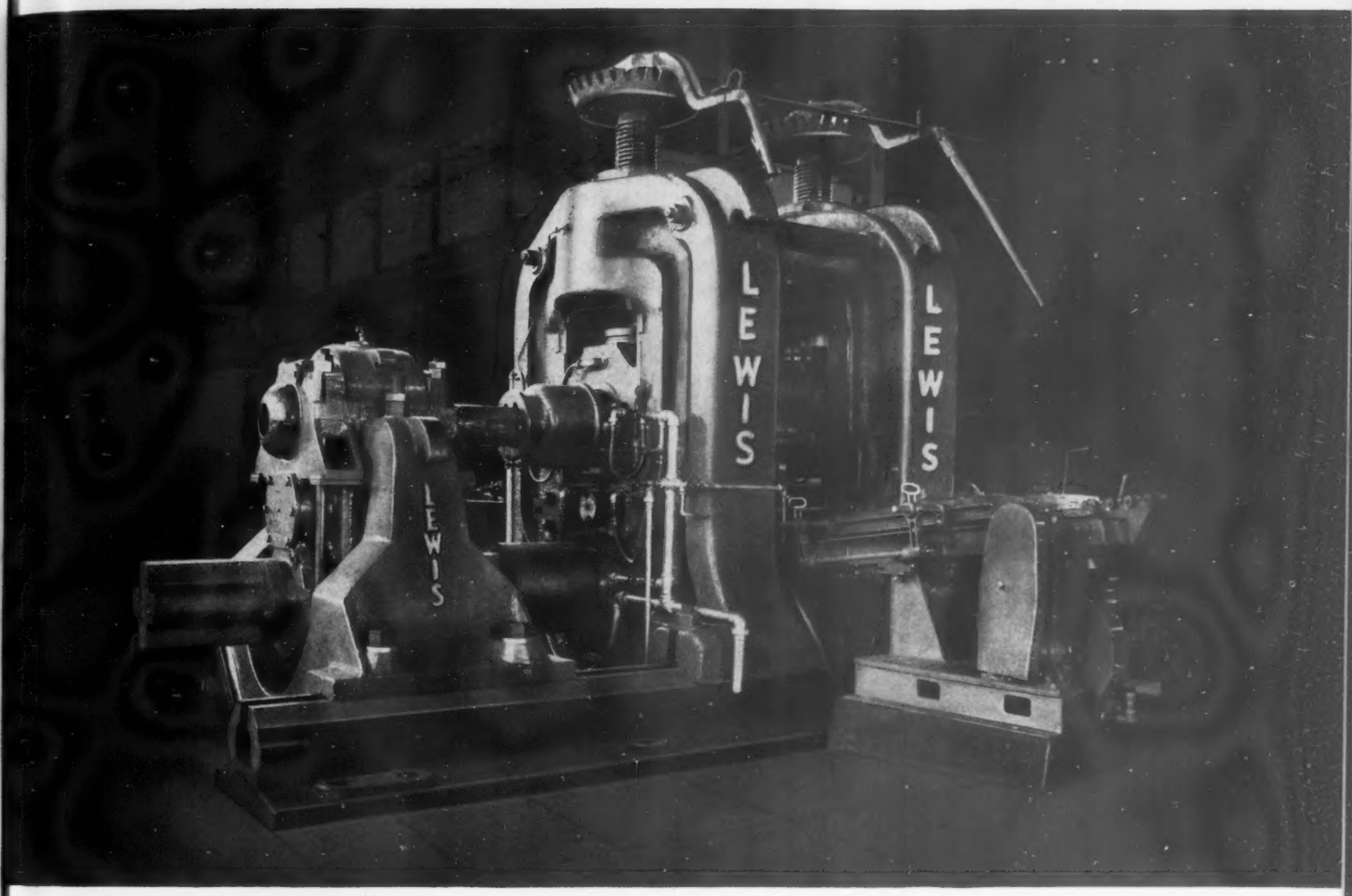
In line with each furnace is a 2-high finishing mill equipped with automatic catcher and feeder tables. Polishing blocks travel continuously lengthwise the rolls on these mills to maintain a high surface finish and to keep the rolls free from any foreign substance, thus assuring an improved surface on the material being worked.

An unusual type of automatic gage is hooked up to these rolls so the operator has instant knowledge of the length of the material after each pass. The gage is connected with the motor drive and operates auto-



Sheets leaving exit end of galvanizing pot showing the special type of mesh belt conveyor

LEWIS Reconstruction Reduces Rolling Costs . . .



This Lewis Mill has all water lubricated bearings, three station water control on rolls and bearings, special tables for handling special sheet bar, spindle carrier type top roll drive and balanced top roll.

The mill shown in the illustration is a special three high Lewis Mill in which the customer's old two high stands were used as a basis for construction. In operation it is now a modification of the standard Lewis Three High Mill providing important economies in operation and production.

Many operators can undoubtedly benefit by such profitable reconstruction. A consultation with Lewis Engineers is invited.

LEWIS FOUNDRY & MACHINE
DIVISION OF BLAW-KNOX CO.
PITTSBURGH, PA.

matically. As soon as a pack enters the rolls, the needle on the gage starts to travel. It continues to travel while the material is being rolled and stops instantly as soon as pack is through the rolls. The instrument is calibrated so point where needle stops indicates length of material passing through the mill on the basis of the time elapsed.

Automatic Gage Speeds Work

Such an automatic gage is extremely fast as length of pack is indicated as soon as it is through the roll. This permits the roller to make any adjustments equired so the rolls may be set at proper position when material is passed back through the mill. This device is a further aid to obtaining an improved product since it affords an accurate control of length of packs and so furnishes an accurate guide to sheet thickness.

From the 2-high finishing mills, the material is piled in the cooling zone and from there is transferred to storage ahead of shears so that by the time the packs reach the shears they are practically at room temperature.

A highly efficient setup is employed to shear the packs to finished sheet size. In this setup, shears and conveyor units are arranged to afford a fast operation and yet to obtain accuracy comparable to resquaring shear.

The next operation is to separate the sheets in the pack. This is done by bending the corners so tongs can be inserted and individual sheets separated. Inspection at this point removes any defective material.

It is necessary to flatten the bent corners and this is done on the cold rolls. From here, the sheets are taken to the annealing department and are given an annealing treatment which is varied depending upon grade of steel and physical properties desired. Tests from each charge are submitted to the laboratory for tests before coating or further processing.

Entering the galvanizing department, sheets first are pickled to remove oxide and insure surface cleanliness, then are taken to the galvanizing machine feed tables.

From feeding tables at entry end of galvanizing line, sheets are fed dry into a concentrated muriatic acid bath and then enter a flux box set in the entering side of the galvanizing pot. Sheets enter the galvanizing pot at from 20 to 150 feet per minute depending upon the size and type of material being handled.

Three of the four galvanizing pots are 106 inches long, the fourth is 136 inches in length. All four pots are 86 inches wide and 60 inches deep. They are indirectly heated by gas burners, there being from 16 to 18 burners per pot.

Pot Heating Controlled

Temperature of pots is controlled from one control point near exit end of each pot. Automatic heat control assures maintaining a uniform temperature. Since largest portion of the heat input must be at the entering end, most of the burners are concentrated at this end of the pot.

Present galvanizing equipment permits handling wide sheets in sizes up to a maximum of 52 inches.

The three smaller galvanizing pots employ three sets of rolls—one at entering end, one at exit end and one at the bottom of the pot. The larger galvanizing unit employs four sets of rolls, two sets being employed at the bottom of the pot for accurate control of pass line through the pot.

Each galvanizing unit is now driven by one 25-horsepower motor which operates all rolls. To permit efficient operation at various speeds and under various conditions, each set of rolls is driven through an individual variable speed transmission unit which permits exact synchronism to be established between all rolls of the machine. This same motor also drives the large mesh belt conveyor which carries material from the pot to the washer.

This mesh belt conveyor is especially designed to provide large and uniform spangles as it has been found possible to control accurately the crystallization of the zinc by means of a properly designed mesh belt. This belt also eliminates chain and conveyor marks and gives uniform cooling so essential in this stage of the operation.

From the cooling conveyor, the freshly coated sheets pass in line to a second conveyor going to the washer where they receive a hot water rinse at an automatically controlled temperature. This removes excess heat and prevents any sal amoniac spots from spreading.

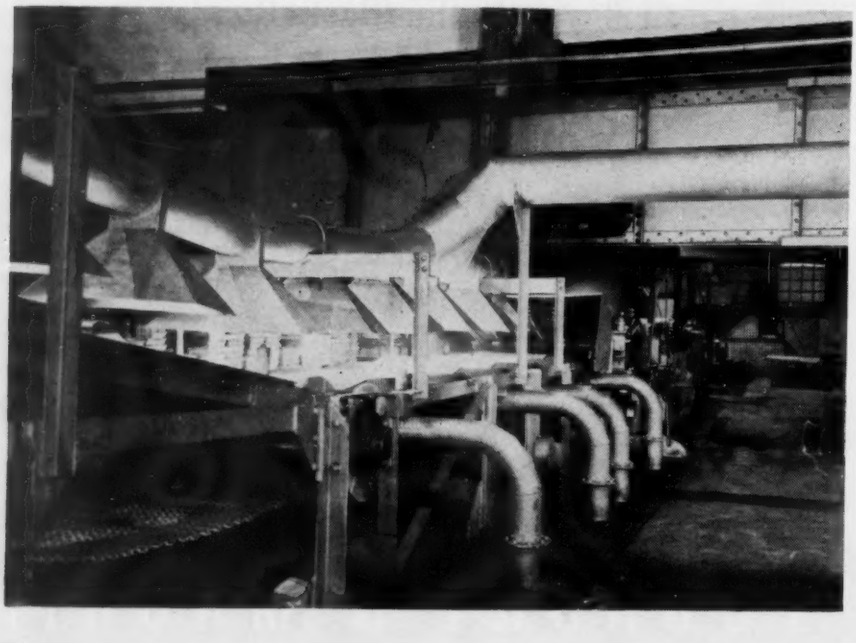
The end of each galvanizing line also contains a drier and roller leveler in addition to the wash unit. This combination of equipment brings sheets to a uniform temperature, gives a flatter sheet and insures a more uniform product.

Each Sheet Inspected

As sheets come from the end of this line, they are carefully inspected by two operators, both sides of each sheet being examined under a special lighting arrangement to afford most efficient inspection.

Galvanizing machine itself contains many improvements over previous equipment. Frame of the galvanizing machine is made of heavy welded steel plate several inches in thickness. This gives a much more rigid construction than usual and assures all parts maintaining perfect alignment. An improved system of guides is employed which has entirely eliminated cobbles in the galvanizing pot. By assuring continuous operation at uniform speed of travel through the pot, this also is an aid to increased uniformity of product.

The galvanizing machine frame and system of guide bars contains a number of sliding joints designed to allow for expansion and contraction of the different elements. This prevents any possibility of distortion of guide bars which might tend to bind or mark the sheets going



Galvanized sheets being conveyed from the galvanizing pot to washer and leveler unit in line

through. This also has been found an important aid to quality.

Galvanizing-machine rolls are made of a special alloy, to Inland specifications. The rolls on washer and drier units are chromium plated to prevent scratching of material, thus assuring that the high quality galvanized surface is not damaged during washing and drying operations.

Length of each of the galvanizing lines totals 106 feet. All the units are carefully aligned to prevent any possible distortion of sheets passing through. Drives for each line are divided into two units, one motor driving the galvanizing machine, the other motor driving the washer, drier and roller leveler unit.

All sheets are subsequently stenciled on an automatic printing press when stenciling is desired.

From end of the galvanizing lines, the sheet stacks are taken to the storage area or to fabricating area where various types of roofing sheets and all types of galvanized structural sheets are made. In this department are located various types of fabricating machines such as corrugating rolls, bending and shaping presses, etc.

No Back Tracking In System

Arrangement of equipment and operations are such that material does practically no back tracking and proceeds in continuous path from the entry end of the sheet mill where material is received in the form of coils from the hot mill. Entire sheet mill and galvanized department is divided into two long bays and one short bay. Decoiler is located in the short bay. Material passes from here through the heating furnaces which extend crosswise between this short bay and the first long bay at one end. Sheets then pass in a line down the first long bay through rolling, sheet breakdown, shearing, opening, annealing, pickling operations to the galvanizing machines at the far end of the first long bay. Here the four galvanizing lines extend crosswise from the end of the first long bay into the end of the second long bay.

Finished galvanized sheets then pass up the second long bay which contains the storage areas and various pieces of fabricating equipment. Thus operations are well planned and equipment is laid out for continuous flow of material.

General working conditions in the department immediately impress a visitor. Exhaust hoods on all galvanizing machines remove all the fumes and gases from the room. Entire shop is kept in clean and first class condition by a continuous painting program which is in process the year round. Painters work continuously on a program which includes all structures in the shop as well as the shop buildings themselves. As soon as the painters have completed coverage of all surfaces, they immediately start retracing their steps. This program assures maximum benefits from good clean equipment and buildings. Also, it leads to lower costs as no heavy layers of dust and dirt are permitted to accumulate to require excessive amounts of cleaning prior to painting.

Entire arrangement of equipment as described here was worked out by Inland engineers who designed and installed all of the equipment.

Predicts High Pressures In Making Gas from Coal

■ High pressures—one of the newer and more powerful tools of the scientist—may some day through research be used on a large scale by the manufactured gas and coal industries to mutual advantage. This prediction is made in Technical Report No. V, of Bituminous Coal Research Inc., "Possibilities of Research in the gasification of Coal," by C. A. Barnes, fuel engineer, Battelle Memorial institute, Columbus, O.

According to the report, statistics show that despite wide-spread distribution of natural gas in recent years present trend is toward an increased demand for manufactured gas. Expansion during the past four years has been in house heating and commercial and industrial fields. It is estimated that the present and potential market in the domestic and house heating field is 40 per cent greater than the amount being supplied.

In 1937, 68 per cent of the manufactured gas was used for domestic purposes, producing a total revenue of $360,755,000. Thus an increase in distribution of manufactured gas will benefit the gas industry. Coal consumption will increase if the energy obtained from the coal forms its present or a greater portion of the total energy contained in the gas, thus benefiting the coal industry.

Dr. Barnes states this means that improved gasification processes, possibly employing high pressures to obtain a gas of high calorific value without use of oil for enrichment, are of equal interest to the gas utility and the coal producer.

That the prediction made in the report is no "pipe dream" is evidenced by recent reports from England which state that "—results obtained indicate the possibility of gasifying at these high pressures a large proportion of what has been regarded as the fixed carbon of the coal in the form of a gas rich in methane and of high calorific value."

From the standpoint of gross consumption of coal, processes by which gas is made by carbonization of coal, are more favorable to the coal industry than processes of complete gasification, but production of coal gas often has been limited by inability to dispose of the coke. For this reason, the report says, the coal industry should co-operate with the manufactured gas industry to promote use of coke as a domestic fuel.

Inspecting sheets under mercury vapor lights just after coming from the washer and leveler

Versatile Steels

Correct choice of an alloy steel permits using material of just one chemical analysis for various purposes by varying the heat treatment to give the exact physical properties desired. This allows foundry to perfect melting and casting practice, simplifies production problems

■ A STEEL that can be made suitable for a number of different applications by simply varying its heat treatment possesses several practical and economic advantages of considerable importance. In the case of cast steel, versatility also has advantages for the foundry as well as for the user. With such a material, a foundry can standardize on one base analysis and vary properties of the steel by heat treatment to meet various specifications. Working with one type of steel, the foundry then can concentrate upon perfecting melting and heat treating practices.

That such a scheme eventually works to the benefit of user as well as producer is illustrated by the experience of Dodge Steel Co., Philadelphia, and Link-Belt Co.'s plant in the same city. Dodge Steel produces cast manganese-molybdenum steel gears for Link-Belt speed reducers, which range in capacity from ½ to 355 horsepower. Besides such standard drives, many special kinds are made for heavy duty service.

Gears Heat Treated

Gears include herringbone, helical and spur type in sizes from 16 to 61 inches outside diameter with faces varying up to 18 inches. Webs may be solid, pierced or spokes. All are cast from a standard analysis of manganese-molybdenum steel. Various specifications for the different gears are met by changing the heat treating schedule.

Standard analysis used includes carbon from 0.25 to 0.35 per cent, manganese from 1 to 1.25 per cent, silicon from 0.25 to 0.35 per cent, molybdenum from 0.30 to 0.40 per cent with maximum values of phosphorus and sulfur each held below 0.05 per cent.

Although heat treatment is varied to give physical characteristics determined by the application, it is standard practice in all cases to subject castings to a preliminary normalizing treatment at 1750 degrees Fahr. to break down the casting structure and to homogenize the structure throughout the gear. This treatment is followed by a second normalize and draw or by water quenching and drawing at temperatures dictated by the individual specifications. Castings are held at temperature for 1 hour per inch of cross section in every form of heat treatment. Physical properties developed by the different heat treatments are given in Table 1.

Link-Belt specifications call for definite hardness ranges for gears

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Abstracted from the *Moly Matrix*, published by Climax Molybdenum Co., New York.

TABLE I—HEAT TREATMENT AND PHYSICAL VALUES PRODUCED

Heat Treatment of	Tensile Strength p. s. i.	Yield Point p. s. i.	Elong. 2" %	R. of A. %	B. H. N.
N. 1650; D. 1100–1150	90,000–100,000	60,000– 70,000	16–25	25–40	180–210
W. Q. 1650; D. 1250–1200	100,000–120,000	75,000–100,000	15–25	35–55	210–240
W. Q. 1650; D. 1200–1100	120,000–130,000	100,000–115,000	14–16	30–50	240–270
W. Q. 1650; D. 1100–1050	130,000–140,000	115,000–125,000	12–14	25–40	270–300
W. Q. 1650; D. 1050– 900	140,000–155,000	125,000–140,000	10–15	20–30	300–330
W. Q. 1650; D. 950– 900	155,000–170,000	140,000–155,000	8–10	15–30	330–360
W. Q. 1650; D. 700– 900	170,000–180,000	155,000–170,000	5–10	15–30	360–390
W. Q. 1650; D. 700– 550	180,000–200,000	170,000–190,000	4–10	10–20	390–420
W. Q. 1650; D. 550– 500	200,000–215,000	190,000–205,000	3– 8	8–20	420–450

of different size, load capacity and type of gear. For example, specifications for large spur gears call for hardnesses ranging between 180 and 210 brinell because such gears must stand comparatively high shock loads. Single helical gears are usually treated to give a hardness between 270 and 300 brinell because wear resistance is important.

Herringbone gears form the majority of work produced, several hardness ranges being specified. Gears above 40 inches outside diameter range from 180 to 210 brinell. Gears from 40 to 17 inches outside diameter range from 210 to 240 brinell.

Both Dodge Steel Co. and Link-Belt Co. keep a close check on gear hardness. Dodge tests them before shipment, and Link-Belt tests them after rough machining. In this connection it has been found that the steel hardens quite uniformly in sections up to 3 inches thick. The foundry also keeps a close check on physical properties. Test coupons are cast from every heat.

Machinability A Factor

Machinability of the steel has much influence on its performance, especially in herringbone gears. Since such gears are required to be practically silent, they must not only be uniformly hard so that wear will be even, but teeth must be extremely sharp and of exact profile. The fact that this steel is free-cutting at high hardness adds to its suitability for this service.

This same steel is used for sprockets as well as gears. Sprockets are first normalized from 1750 degrees Fahr., followed by normalizing from 1650 degrees Fahr. and drawn from the 1100 to 1150-degree Fahr. range. This treatment produces a hardness of 180 to 210 brinell in the web and hub. Teeth are heated to about 1650 degrees Fahr. and water quenched, which hardens them to about 400 brinell.

Link-Belt Co. has standardized on chromium-molybdenum (S.A.E. 4150) steel for pinions on its entire line of gear drives. This steel is purchased in the heat-treated condition. Specifications for pinions less than 5½ inches outside diameter call for a hardness range from 286 to 327 brinell. Pinions from 5½ to 12 inches outside diameter are specified between 269 and 302 brinell. Chromium-molybdenum steel is used here because of the excellent combination of toughness and hardness that it develops from heat treatment and because it machines easily and accurately at the specified hardness values.

Spray Grill Floor Eliminates Booth

■ Lathes are now being painted on the assembly floor within a few feet of other operations with no walls or partitions of any kind to screen off sprayers in the lathe manufacturing plant of Monarch Machine Tool Co., Sidney, O. Lathes mounted on small dollies run on a track over a 7 x 12-foot grating in the

Lathes of any length may be sprayed, section by section, over this grille. Air exhausting into grill removes fumes

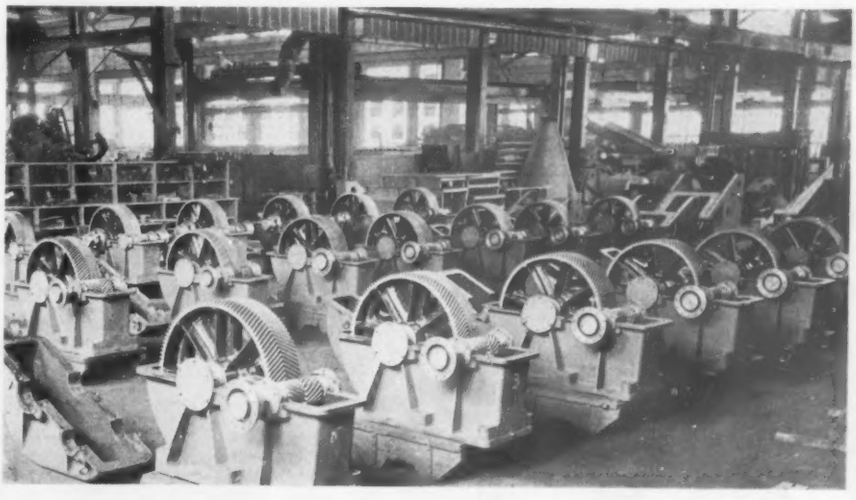
floor through which air is exhausted at 200 feet per minute. The operator is never in a position to inhale fumes since air draft is downwards and he never has occasion to hold spray gun above his head. The fume-laden air discharges into a large welded tank located directly below grating where a continuous cascade of chemically-treated water segregates solids in paint fumes. This precipitates a substance resembling sponge rubber which can be easily cleaned from tank. Since precipitate is noninflammable, the fire hazard created by the highly combustible pyroxylin which collects around the conventional spray booth is eliminated. Air exhausting through the outside stack first passes through eliminator packs at opening of stack funnel which removes all water from air. This allows chemicals to be used over again.

Metal Etching Boiled Down to Handbook

■ *Etching Handbook*, (Aetzheft), by Angelica Schrader; cloth, 24 pages, 5¾ x 8¾ inches; published by Gebruder Borntraeger, Berlin, Germany; supplied by STEEL, Cleveland; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London S. W. 1.

This volume, which is printed in German, is by one of the authors of the well-known "Atlas Metallographicus," noted for its excellent micrographs. As the present volume contains only 24 pages, it is amazing that so much information is presented. Essentially, as might be expected, the information is boiled down to its briefest terms, and the arrangement in two columns on a page makes it extremely easy to use. The column at the left names the particular operation, such as specimen preparation, while the column on the right describes in detail, briefly and concisely, the procedure to be employed.

Materials covered are iron and steel, cast iron, special steels, rustless steels, aluminum and aluminum alloys, antimony, lead and lead alloys, gold and precious metals, copper and copper alloys, magnesium and magnesium alloys, nickel and nickel alloys, silver and silver alloys, tungsten, zinc and zinc alloys, tin and tin alloys. In addition, part of the text is devoted to general comments on specimen preparation, a table showing differences in appearance of various structural components of ferrous materials with various etching agents, and a detailed table covering the same features for intermediate crystallization in aluminum alloys.



Typical speed reduction units as made at Link-belt Co.'s Philadelphia plant from the material described

ACCESSIBLE CONTROL

Accessible is the word for the controls shown here and accessible is the word for the National Machine Tool Show section of STEEL's September 25 issue.

Here, grouped together in a special section, you will find complete convention details plus several major features available in no other medium. Be sure to see this special section—it means money in your pocket . . . remember the date—September 25, 1939.

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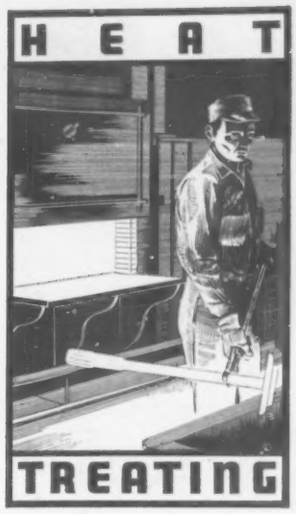


Cycle Spring Frame

Automatically controlled zones of non-oxidizing gas-fired conveyor furnace assure even heating of odd-shaped combination frame and spring. In tempering, temperature of all parts of burner and recirculating air draw furnaces is held to within five degrees Fahr.

By H. J. Langley
United Spring & Bumper Co.
Los Angeles

■ RIDING comfort has been accentuated in the Autocycle, manufactured by our company, through utilization of frames made of flat leaf spring steel. The construction thus obtained is sufficiently resilient to absorb shocks and afford the rider the same degree of easy riding as is had in the present-day motor car. The Autocycle frame is manufactured from the same grade of chromium-manganese steel used by several of the leading manufacturers of auto leaf springs and under the same rigid specifications.

Before a heat of steel is accepted for the leaf spring frame, it is inspected for size, surface imperfections and decarburization. Samples from each heat are heat treated and given the usual metallurgical tests for hardness, strength and resistance to repeated stresses.

After these tests, bars are passed through mechanical shears and cut into the various lengths required. Holes are punched or drilled before the forming operation, which is done on special machines. Ends are looped or "eyed" and machining or forging operations performed. The sections now are ready for heat treatment.

Furnaces Are Conveyor Type

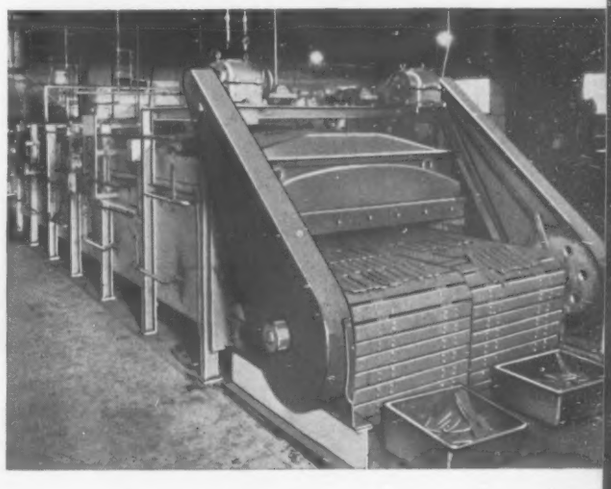
Heating furnaces are the conveyor type approximately 40 feet long, nonoxidizing and gas fired with low pressure automatic proportioning tunnel burners. Conveyor is made with nichrome fingers supporting steel 5 inches above hearth to allow free circulation of heat on all sides, and eliminate all chances of uneven heating such as may occur with the walking beam or other conveyor furnaces.

The furnace is divided into three automatically controlled zones. The springs are placed on conveyor spaced approximately one inch apart and enter zone No. 1, or the preheating zone of the furnace where the cold steel is gradually brought up to an intermediate temperature. In zone No. 2 of furnace, heating continues until steel reaches desired quenching temperature, then passes into zone No. 3, which is the soaking zone. To insure uniform grain structure this soaking allows sufficient time for thorough heating and the necessary physical and thermo-changes taking place within the steel. After passing through this heating furnace, frame sections are discharged and are individually quenched in circulating oil, the temperature of which is kept at 100 degrees Fahr., plus or minus 5 degrees.

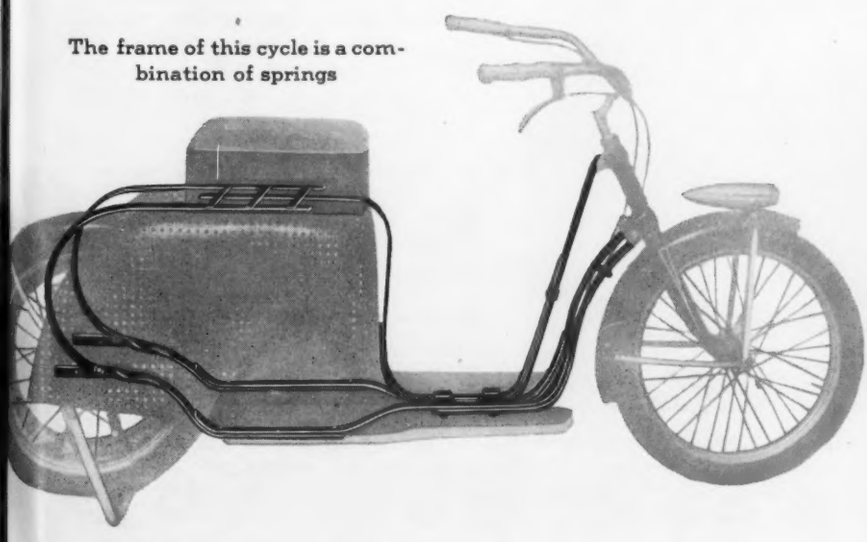
Quenching Oil Is Cooled

This quenching oil is circulated through a cooling system at the minimum rate of 750 gallons per minute which permits quenching of steel without any excessive heating of oil and affords uniform hardening. Oil, prior to entering quenching tank, is pumped from storage to cooling tower through a series of

Automatic gas-fired furnace heat treating leaf springs



The frame of this cycle is a combination of springs



multiple tubes, which are constantly sprayed with water. Amount of water showered on coils (containing oil) determines the temperature of the oil. Approximately 40,000 gallons of oil are required to fill the circulating system and a minimum of 75,000 gallons always circulates.

After quenching and hardening, steel emerges from oil on a conveyor, and is transferred onto the draw fire conveyor. Two types of draw furnaces are employed. One type with burners equally spaced one foot apart, above and below apron and the other of the continuous recirculating air type. Both have an effective load area 5 feet wide x 60 feet long. Direct-fired air heaters supply a large volume of hot air which is picked up by alloy fans and forced through a heat resisting duct system installed under conveyor to provide an even distribution of heat throughout furnace. A pickup duct runs entire length of furnace under main arch for reheating and recirculation of gases.

Before draw furnaces were put in use, five exploring thermocouples were placed at different points on apron conveyor, one at each edge, one in center and one each midway between center and edges. A temperature recorder instrument was attached to each thermocouple. The greatest variation in temperature did not exceed 5 degrees Fahr. Such uniformity in furnace heating is necessary for exact tempering.

The steel, after being placed on this conveyor, travels through draw furnace in 1½ hours or more depending on size of steel. The heavier steel requires a longer time to draw. After cooling from drawing operation, springs are immediately conveyed to the inspection department where they are tested for hardness and inspected for shape and any irregularities due to warpage are corrected. The frame now is ready to be cleaned for final assembly.

♦

Prepares Data Book on Gray Iron Properties

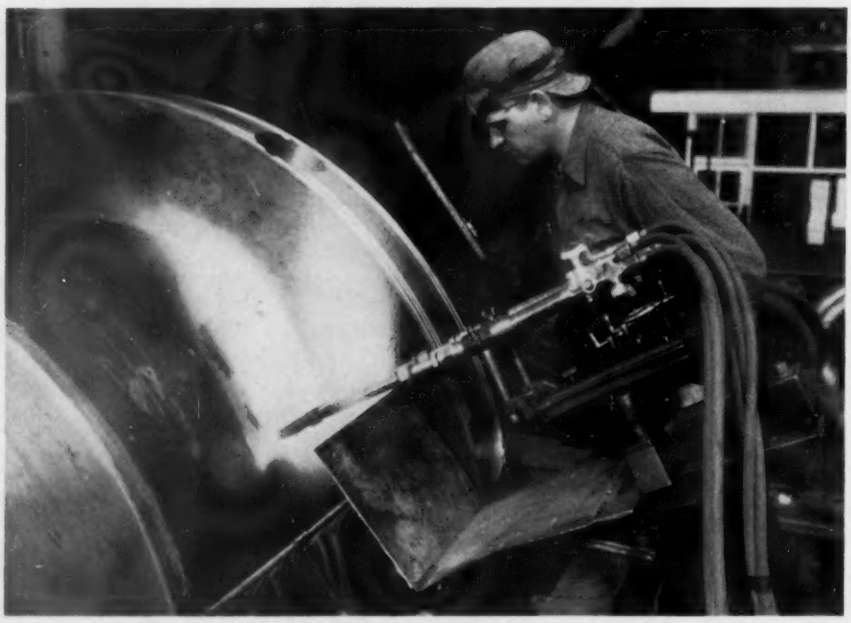
■ To make available the best of published information on the properties of gray cast irons to the foundryman and the engineer charged with selection of the irons best suited to meet the requirements of both producers and users of castings, the Gray Iron Founders' Society Inc., 1010 Public Square building, Cleveland, has issued a 56-page reference book titled "The Engineering Properties of Gray Cast Iron."

Over a year ago, the society commissioned Battelle Memorial institute, Columbus, O., to make a critical survey and bibliography of basic information scattered throughout countless monographs, reports, transactions, books, etc., published in the United States and Europe, and to incorporate the important material in a convenient form for ready reference. The society hopes that the data sheets resulting from this review will provide a useful guide to foundrymen and their customers, and at the same time will afford a jumping-off place for further investigation and research.

The text is arranged in four sections. In Section 1, the most reliable of published data on common properties of gray cast irons are tabulated to serve as a brief summary of technical literature. This is followed by a discussion of effects of section size. Additional information on properties of cast irons that are not ordinarily determined or which cannot be expressed in terms of a simple test are found in Section 2. This includes a brief discussion of those properties such as machinability and resistance to corrosion that cannot be evaluated numerically.

A selected bibliography with comment on the inter-relation of the various properties of gray cast irons constitute Section 3. For convenience, reference is made to specifications established by different engineering societies in various countries, as well as specifications of the American Society for Testing Materials. Literature references are grouped by topics in Section 4.

Flame Hardening Large Lathe Spindle



■ This carbon steel lathe spindle 63 inches in diameter is being surface hardened by an oxyacetylene flame held against lathe spindle while spindle revolves. Note spray of cooling water. Photo courtesy Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and Air Reduction Sales Co., New York

Investigates Electric Arcs At High Pressures

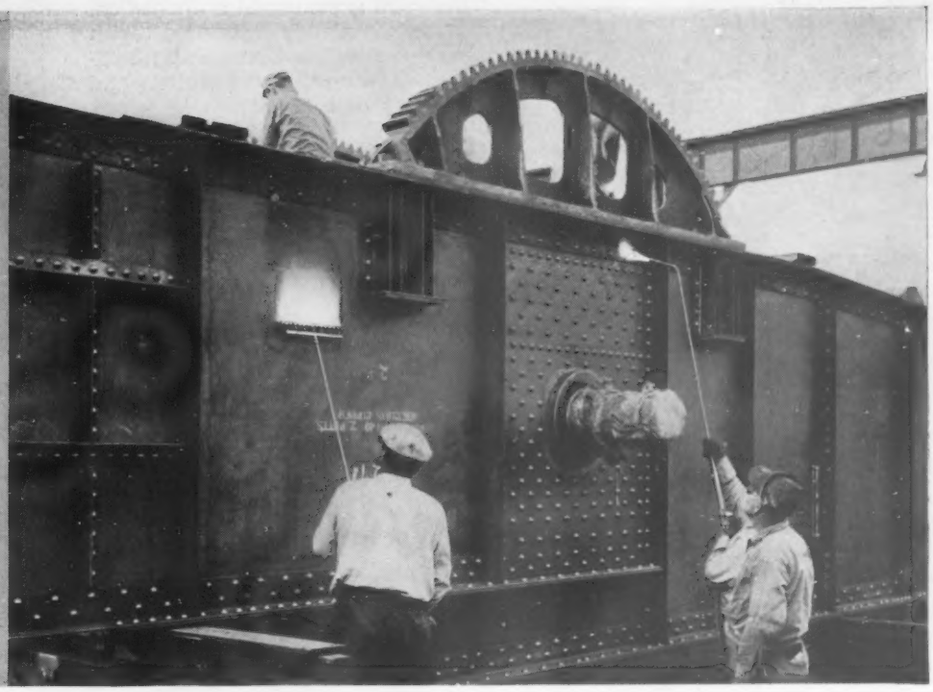
■ Working with gases at pressures as high as 3600 atmospheres, or 25 tons per square inch, and at temperatures of more than 12,000 degrees, scientists in the General Electric research laboratory, Schenectady, N. Y., have unearthed some hitherto unknown facts regarding properties of electric arcs. They have found the hydrogen arc has an extremely small cross-section even at atmospheric pressure, being similar in this respect to the nitrogen arc at pressures over 100 atmospheres. In hydrogen at high pressure, it is not possible to maintain an electric arc, even briefly; the velocity of the gas is so high the arc is immediately extinguished. An arc carrying 10 amperes, which would have a diameter of about ½-inch in air, contracts to a tiny thread at high pressures.

Steel & Engineering Inc. Functions As Usual

■ Through statements made in a recent article in STEEL, a misunderstanding has arisen affecting Steel & Engineering Inc., 7501 Thomas boulevard, Pittsburgh. There has been no change in the functions of this company, and normal operations are being carried out at the above address.

AIRCO

FLAME CLEANING

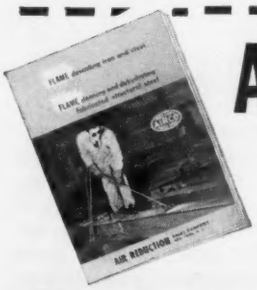


Forestalls Future Paint Flaking

The gradual loosening of scale, due to the presence of moisture, is one of the principle causes of paint flaking from structural steel. Airco engineers have effectively solved this problem by the application of an Airco high-temperature oxy-acetylene torch to the fabricated steel just prior to painting.

By quickly passing the torch over the surface, the occluded moisture is driven from within and beneath the surface, leaving a warmed surface that has proved extremely beneficial in obtaining a lasting paint job. The illustration above shows one of the girders of a 4,000 ton bridge being Airco Flame Cleaned with a 14" flat tip on flat surfaces, and a style 110 No. 1 round tip on rivet heads and corner connections.

Airco engineers will be glad to lend their experienced advice to help you solve any problem involving the oxy-acetylene process. Consult us.



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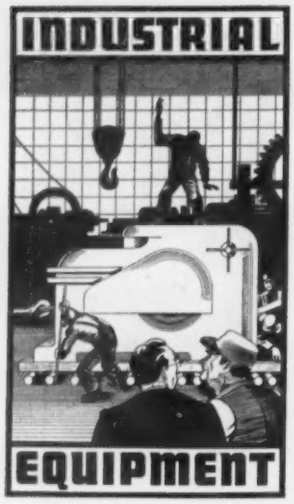
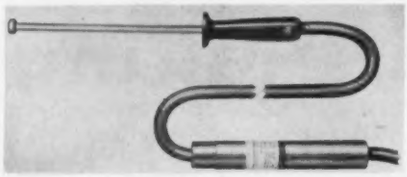


Double Cable End Tap

■ Ohio Brass Co., Mansfield, O., announces Type G fused trolley tap with double cable end. This provides cable-clamping connection in each end of tap so protective fuse may be placed directly in trailing cable. Special rubber handle is suit-



able for holding contact ball or hook type nips. Unit offers more handling freedom and eliminates necessity of holding fused trolley tap in hand while nipping along trolley wire. Used with contact ball nip, nip and rubber handle may be inserted in forked jaw of special clamp so locomotive may proceed into room on cable reel.

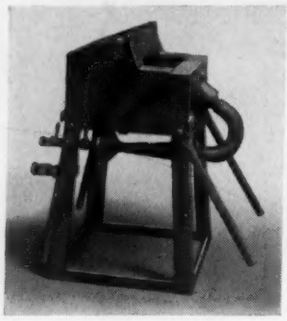
Lifting Magnets

■ Dings Magnetic Separator Co., Milwaukee, Wis., has developed high intensity lifting magnets for handling scrap, billets, pig iron, coils and slabs in steel mills, kegs of nails and other magnetic metals. Center support for coil divides weight of coil in two so that when magnet is dropped, shock of entire coil is not transmitted to lower layer of

wire. Coil is contained in welded enclosure, completely waterproof, with special expansion chamber built into it, allowing for contraction and expansion of coil.

Gas-Burning Forge

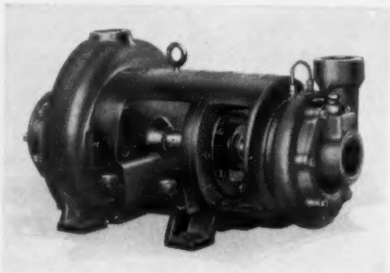
■ Hauck Mfg. Co., Brooklyn, N. Y., offers Handi-Gas-Forge burning any gaseous fuel with Hauck high pressure air-gas booster and compressed air from 30 to 120 pounds per square inch pressure. Opening is 4 x 10 inches and heating chamber 10 x 10 x 5 inches. Unit consumes 200,000



B.t.u. of gas per hour and 6 cubic feet of air per minute at 60 pounds per square inch pressure. Normal heating capacity is 350 ¾ x 3-inch rivets per hour. Spent gases pass upward and away from operator through top opening eliminating air curtain and saving 8 to 20 cubic feet of compressed air per minute. Units are all steel, welded or riveted.

Centrifugal Pumps

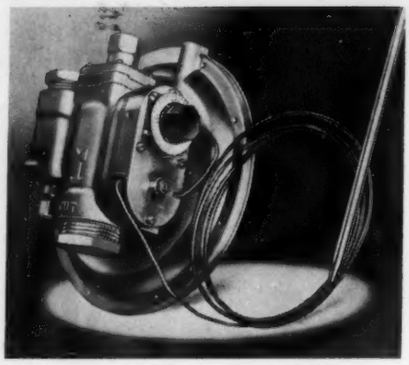
■ Worthington Pump & Machinery Corp., Harrison, N. J., offers a group of compact turbine-driven, centrifugal pumps for use where fire and explosion risk from chemicals, gasoline, dust, oil or gas make



other power units unsafe. Capacities range from 10 to 400 gallons per minute at 10 to 240 feet total dynamic head with steam pressures to 300 pounds per square inch maximum.

Modulating Gas Valve

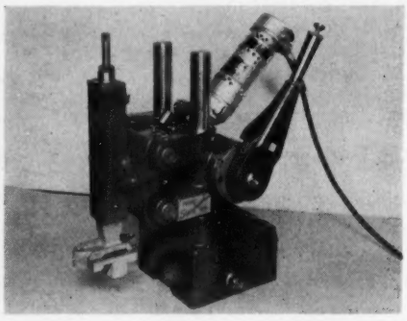
■ Wheelco Instruments Co., 1929 South Halsted street, Chicago, has developed throttling gas valve, a self-actuated temperature controlled valve with sensitive temperature element. Temperature-sensitive ele-



ment upon being heated or cooled within throttling range actuates a double-seated valve and proportions flow of gas to temperature demand. As temperature approaches upper limit of throttling range (valve almost closed) and tendency for "blow-back" becomes imminent (flame velocity being greater than gas velocity), "on-off" control completely shuts down gas flow until temperature has dropped sufficiently to overcome low-limit valve requirements. "On-off" control then opens temporarily to full gas flow, causing temperature to approach rapidly control point setting, when valve again becomes throttling in action. Thus over- and under-shooting are eliminated.

Superfinishing Head

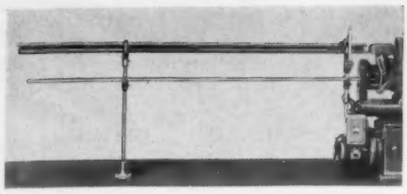
■ Foster Machine Co., Elkhart, Ind., has developed superfinishing heads



in three sizes for work up to several feet in diameter. Heads are mounted on compound of engine lathe cross slide. Practically any cylindrical work within the capacity of the lathe may be superfinished. Attachments also have been successfully applied on reamer and broach work.

Silent Stock-Support

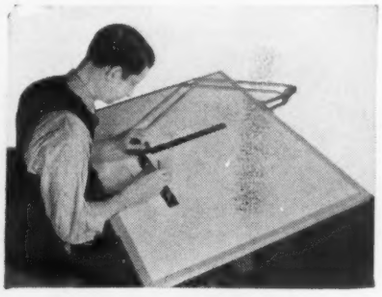
■ Brown & Sharpe Mfg. Co., Providence, R. I., announces silent stock support for wire feed screw machines which eliminates objectionable noise created by rotation of stock in regular stock tube. Stock rotates in flexible metal guide, open at both ends and supported in non-metallic casing which deadens sound and prevents transfer of vibration.



Grease gun connection facilitates occasional lubrication of inside of flexible guide. Casing is free to slide in outer support bracket and is secured to inner support bracket by simple swing latch which prevents creeping during operation of the machine. A new bar is inserted in machine end of unit by transferring inner support bracket to loading position stud which has vertical adjustment to assure bar clearing machine. With bracket back in operating position, new bar is easily inserted in machine spindle. Unit is made in four sizes designed to take stock up to capacities of machines.

Drafting Machine

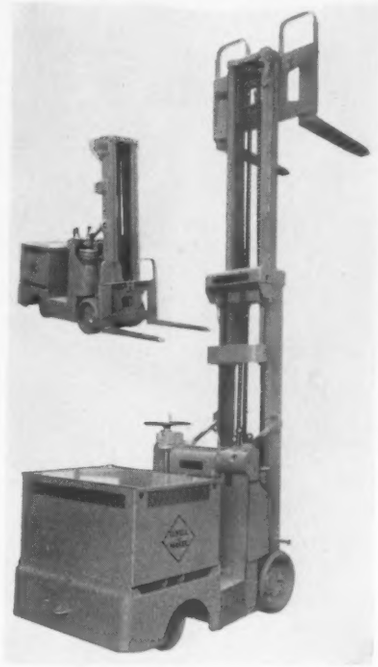
■ Eugene Dietzgen Co., 2425 Sheffield avenue, Chicago, announces Reliance drafting machine for use where volume or type of work does



not justify investment in larger, costlier units. Light-weight, strong anchor construction and adjustment feature compensating for natural wear and greatly increasing useful life are incorporated. Protractor and knob are constructed in one integral unit. Protractor turns through full 360 degrees and has easy thumb control through angle lock. Scale chuck plates take any standard scales. Drawings up to 23 x 28 inches are accommodated.

Center Control Truck

■ The Elwell-Parker Electric Co., 1836 Euclid avenue, Cleveland, has developed a center control fork type truck F-16 rated 6000 pounds. Unit is built either as telescoping or non-telescoping model for inside car work or high tiering of pallet loads in warehouse. Operator's station amid-ship affords clear view of fork tips when load is being picked up or placed, and contributes to his safety without increasing turning radius. Frame is box-like formed plate all-welded structure with fixed full floating axle and nonsteered wheels fitted with solid rubber tires. Fork hoist is fitted with slip clutch for protection against excessive overloads or accidental thrust of load



forks under immovable loads while an overrun ratchet device protects hoist and chains if load forks are lowered against obstruction. An electromechanical brake holds load at will of operator and hoist generator motor is designed to provide for regenerative function of returning electric current to battery when lowering loads from stacks.

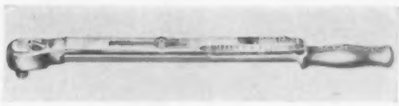
Finger Valve Compressor

■ Ingersoll-Rand Co., Phillipsburg, N. J., has added its Type 30, 5-horsepower, finger-valve compressor

to its line of 15 other finger and plate-valve models. Compressor is capable of 200 pounds continuous service rating and has a totally enclosed centrifugal unloader.

Torque Wrench

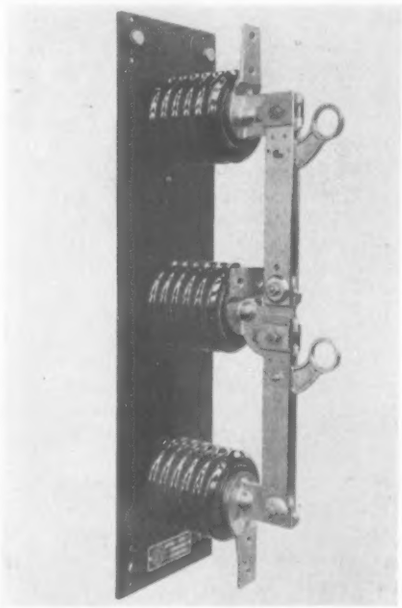
■ J. H. Williams & Co., 225 Lafayette street, New York, announces reversible ratchet No. S-57 Torque "Measurrench" for use with any detachable socket having a drive-



opening ½-inch square. Calibrated scale shows applied torques of 20 to 200 foot-pounds for sight reading; a sharp sound signal is given for any desired torque from 35 to 200 foot-pounds for sound reading. Although only right hand torque is measured, reversing wrench action allows left hand turning. A twin double-tooth oscillating pawl provides constant engagement with two teeth of the 36-tooth ratchet gear in both on and off turning and makes possible operating swing of 1/30 full turn. Drop-forged handle is 19½ inches long.

Disconnect Switch

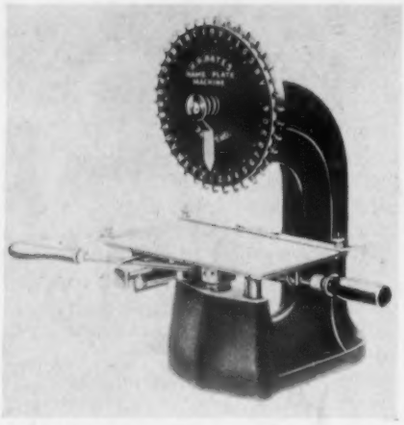
■ Delta-Star Electric Co., 2400 block, Fulton street, Chicago, has a single pole, double blade, tandem throw, 15-kilovolt, 600-ampere disconnecting switch. Inside lock combined with common hinge and contact member at center insulator unit results in



shorter blades and decrease in width of current-carrying parts. Tongue-type contacts are of line-pressure type. Steel base is equipped for mounting on either flat surface or 1¼-inch pipe frame.

Name Plate Machine

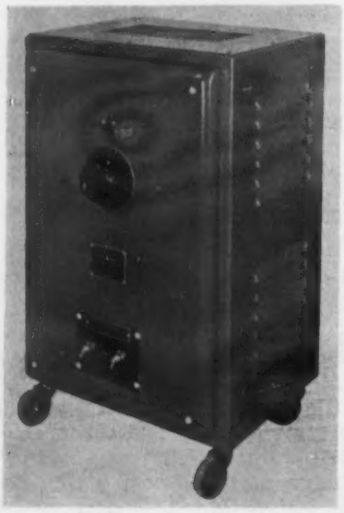
■ H. O. Bates, Elizabeth, N. J., offers its name plate machine No. 3 for stamping letters or figures on thick blocks, pieces or parts. By adjustment of pressure screw beneath work-table, materials up to hardness of stainless steel including untempered alloy and carbon steels, half-hard brass, chrome-plated brass, various plastics, woods, etc., up to 2.00 inches thick are accommodated.



Standard die sizes are from 1/16 to 3/16-inch and replaceable dies are of alloy tool steel precision engraved, hand finished, hardened and tempered. Selection of letters or figures is by turning character wheel.

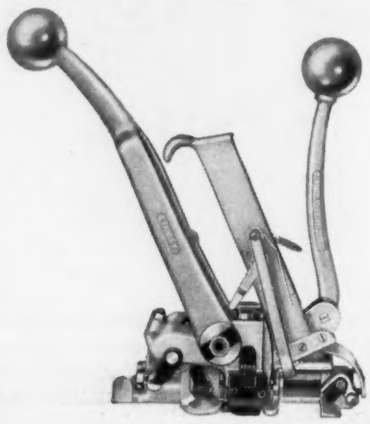
Rectifier Arc Welder

■ National Metal Processing Co., Mansfield, O., announces the Weir arc welder, model 80, with an output range of 20 to 80 amperes, direct-current, ten heat changes, open circuit voltage of 60 to 65 volts, welding voltage of 18 to 21 volts and an electrode capacity of 1/16 to 5/32-inch of any type, reverse or straight polarity. Welder can also be used with carbon electrodes up to and including 5/16-inch and is rated at ¾ duty continuous service. Operating characteristics are claimed to be: Rapid voltage recovery upon striking arc (hastened by a filter circuit); constant voltage during welding (automatically determined by resistance characteristics of electrode used. Neither ammeter nor voltmeter readings are necessary); smooth and consistent arc at 20 to 25 amperes and lower output; and efficiency of 55 to 60 per cent, with high power factor, depending upon electrode used. Output control is by one rotary switch. Striking arc creates no surge in power line and will not cause flickering of lights. Input is 220-230 volts, 30-35 amperes alternating current (also built for 440 volts). Welder comes in metal cabinet mounted on casters.



Strapping Tool

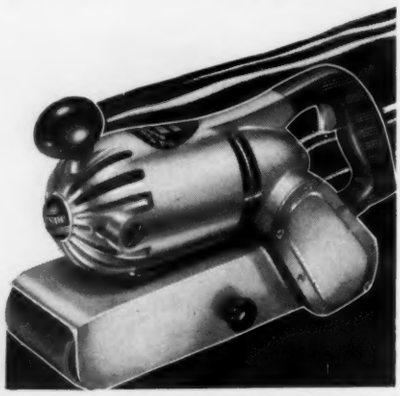
■ Stanley Works, New Britain, Conn., announces Ace strapping tool to strap shipping containers quickly and securely. With this tool it is said strapping is reduced to a five-second job. Tool is equipped with automatic seal feed. Positive spring feed holds seals in any position. Magazine is loaded with clip of 100 seals, available in 3 sizes, for ¼, ⅜ and ½-inch strapping. Strapping is fed into tool and a few quick pulls of tension lever tighten it.



Then a second lever is pushed forward to cut and automatically seal strap. Complete operation requires but two motions.

Three-Inch Belt Sander

■ Skilsaw, Inc., 3312 Elston avenue, Chicago, offers Zephyrplane 3-inch



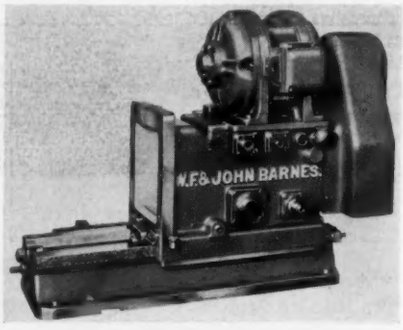
belt sander for those whose work does not justify purchase of larger and more expensive sanders. Interchangeable knob handle can be moved from top to nose of sander for greater convenience in sanding vertical surfaces. "Touch-control" lever instantly releases tension on sanding belt so changing belts is simple and quick. Pressure control trigger switch is said to make accidental starting impossible. Frame is die-cast aluminum. Tool weighs 13¼ pounds and sells for $82.50.

Push-Button Control

■ Allen-Bradley Co., 1311 South First street, Milwaukee, has put on the market push-button control stations of reinforced bakelite with cover mounted on a die-cast frame. By removing a single screw, cover can be taken off exposing all terminals. A conduit opening is provided at one end of frame. Double break, silver contacts are located in recessed chambers for protection against dust and dirt.

Hydraulic Sliding Head

■ W. F. & John Barnes Co., Rockford, Ill., announces sliding head unit SH-75, a 1 to 3-horsepower self-contained hydraulic unit for feeding cutting tools into work while rotating the spindles. Auxiliary base can be mounted on existing machine beds. Combination vertical and horizontal machines in conjunction with indexing table can be built by supplying proper bases, tooling and fixtures. Unit can be supplied with single spindle and universal fixture



for drilling or boring operations on a wide variety of work. Spindles are mounted in gear box which can be fastened to flange of unit. Normal automatic operating cycle includes rapid approach, feed, dwell (if desired), rapid return and stop. Hydraulic equipment consists of a constant - delivery rapid - traverse pump and variable delivery piston type feed pump. Rate of feed is adjustable between 0 and 10 inches per minute. Dwell may be varied from 0 in drilling or reaming to maximum for counterboring or facing.

Weld Cleaner

■ In the July 10 issue of Steel under "Reduces Weld Spatter" it was stated that Spatter-Nox reduced spatter 50 to 75 per cent, whereas Spatter-Nox, claims the manufacturer, definitely eliminates all spatter and reduces cleaning time 50 to 75 per cent.

Making Wire Rope

(*Concluded from Page* 48)

fore entering stranding die. Fig. 6 shows the closing operation where the strands are laid into a wire rope.

In the wire rope fabricating department, the winding machines are grouped in a section of the room at F, Fig. 1, with stranding and closing machines at G and H. These machines vary in size to accommodate the extremely wide range of products made here which includes practically every size and type of wire rope in commercial use today.

Wire rope is wound on large drums as it is made up on the closing machines. These drums are then stored in the large storage area at J where much completed wire rope is held instantly available for shipment. Shipping floor at K, Fig. 1, is near the railroad siding where outgoing shipments are easily loaded.

Thus, path of material through the wire drawing plant is roughly in a loop. Path of material in the wire rope fabricating building is in a line minimizing back tracking in handling throughout the processing operations.

Wire rope slings form an important part of the output of the Macwhyte plant. Wire rope has long been recognized as being admirably suited to this class of work because of its lightness and relatively high strength. The process of wire drawing is a continuous proof-testing operation in itself and the methods of fabrication readily lend themselves to the production of an article of great strength and dependability.

Special Work on Slings

Slings, however, usually require a comparatively short length of wire rope, which necessitates special treatment in order to preserve a high factor of safety. This work is done in a separate sling assembly department at M in Fig. 1. The basic idea is to produce a sling having integral eye ends with characteristics similar to that of a weldless forging. This is done by using a continuous strand for grommets, semi-grommet eyes for loop eye slings, and endless ropes for the multiple part braided types.

Fig. 6 shows the splicing of a special thimble in a single-part wire rope sling. Fig. 7 shows the finishing up of a loop-eye in a braided wire rope sling having a strength of 176.4 tons. Many slings are made with end fastenings to facilitate their use. In all cases, the sling is assembled on a special jig to assure that all elements are under uniform tension, thus assuring maximum life in use.

HANDLED WITH A YALE ELECTRIC TRUCK

7,500,000 lbs.—3,750 tons . . . A lot of tonnage in any man's language. Yet that's what one operator using a Yale High Lift Electric Truck is able to handle in 3 months for the Atlanta Plant of the King Plow Company.

And the units to be handled are not standard in size or shape. They run the gamut from metal scrapes to the heaviest die cuts. A real handling job if there ever was one.

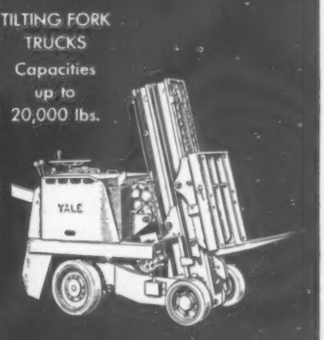
Here's what the King Plow Company has to say about their Yale Electric Truck:

"This truck does a 4-5 day job in 11 hours . . We find many jobs for this equipment which it was not originally installed to do . . . Almost before it was put to work it paid for itself . . . This truck never hesitates even for the longest and steepest ramps . . . It is indispensable—has saved substantially."

Indispensable—Never hesitates—Saved substantially . . . these words means saving and efficiency to the King Plow Company. And they can mean the same to you—for the Yale Electric Truck always conforms to the same service standard—the best.

It has to. Its drive units are more powerful . . . its construction is stronger—its engineering is more advanced. More than just a truck—the Yale Electric Truck is a mechanical efficiency expert! Send for free catalogue giving full information.

Trained sales engineers are located in 56 major industrial centers ready for instant service. Consult your classified directory.



YALE MARKED IS YALE MADE

YALE

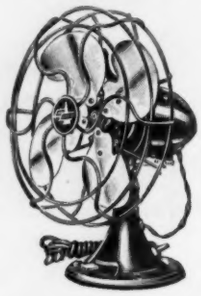
THE YALE & TOWNE MFG. CO.
PHILADELPHIA DIVISION, PHILADELPHIA, PA., U. S. A.
IN CANADA: ST. CATHARINES, ONT.

NEW METAL PRODUCTS

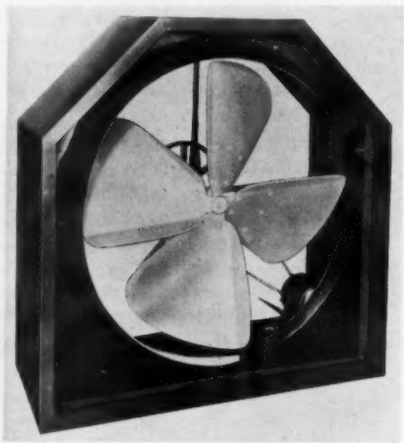
■ A motor grader designed to handle an entire roadbuilding job from bank to bank is announced by Caterpillar Tractor Co., Peoria, Ill. Grader, known as No. 112, is available with either gasoline or diesel engine. Blade positions on machine are almost unlimited, 12-foot blade reaching more than 6 feet outside line of wheels and can be set to cut banks up to 90 degrees. In reverse position, blade can be set for ditching or blading. Changing blade from forward to reverse position takes less than 30 seconds. Machine has four forward speeds with low of 1.8, two intermediates of 2.7 and 4.3 respectively and high of 10 miles per hour. Reverse speed is 2.4 miles per hour. Attachments for motor grader include V-type scarifier, straight type scarifier, V-type snow plow and roller.

■ A gas measuring and recording instrument known as the Calorimeter has been announced by Cutler-Hammer, Inc., Milwaukee. Instrument consists of a tank unit which continuously determines calorific value of gas and a recording unit that indicates this value in terms of B.t.u.'s on a 30-day chart. All underwater parts are made of brass and idler gears are eliminated. Suppressed zero record chart makes variations appear greatly enlarged for greater accuracy and control of adjustments. Instrument has eye-level visibility, both momentary and permanent readings, metal plate behind chart for making notes on chart and synchronous-motor chart drive.

■ Emerson Electric Mfg. Co., St. Louis, has placed on the market a 10-inch, single-speed, oscillating Parker-blade fan with polished aluminum blades and streamlined motor shell. Fan has finger-tip control to adjust arc of oscillation from 90 degrees to stationary position and is guaranteed for five years.



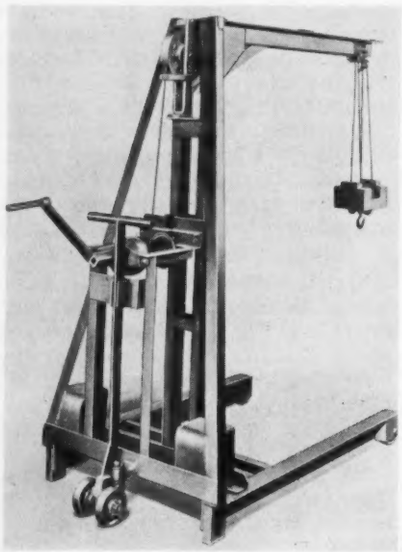
■ Cabinet-mounted home-cooling fans for attic installation having capacities from 7500 to 20,000 cubic feet per minute are offered in four sizes by Wagner Electric Corp., St. Louis. Cabinet is of heavy-gage steel, rigidly braced, with walls acoustically treated to absorb vibration and wind noises. Rubber pad at each corner localizes vibration. Curvature and unusual width of fan blades permit relatively low angle of pitch so that operation is quiet while moving a large volume of air. Cabinet is finished in high-gloss vermilion.



■ A hammer to chip off slag from welds and for other general chipping purposes has been added to the line of Chicago Mfg. & Distributing Co., 1928 West Forty-Sixth street, Chicago. Hammer eliminates cold chisel and hammer which require use of both hands. Combination drift and chisel feature permits chipping at any angle in close quarters. Weight of hammer is 14 ounces and overall length is 11 inches. Head is 5 x ⅞ inches drawn out to chisel and drift points.

■ Two models, ½-yard and ⅝-yard, convertible crawler power shovels have been developed by Byers Machine Co., Ravenna, O. Model 65, ½-yard, weighs 30,000 pounds, is powered by a 50 horsepower, 6 cylinder motor and has a safe crane lifting capacity of 12,500 pounds at 10-foot radius on a 30-foot boom. Model 75, ⅝-yard, weighs 32,500 pounds, has a 60 horsepower, 6 cylinder motor and lifts 13,000 pounds. Four hook rollers on turntable, positive independent cable or chain crowd shovel attachments, increased speeds, ventilated cabs and ability to swing while traveling are features of these shovels.

■ Portable cranes in capacities from 500 to 5000 pounds with either fixed or revolving boom are "tailor-made" by Barrett-Cravens Co., 3255 West 30th street, Chicago. Any lifting height desired is available, and boom uprights can be made rigid, hinged or telescoping to clear low doorway clearances. When lifting or lowering, front wheels are raised so members supporting upright boom contact floor, giving firm footing.



Optimism Growing In Steel Markets

Demand Resisting Usual Summer Lull; Output At Year's Peak

MARKET IN TABLOID ★

Demand
Well sustained despite lag among some large users.

Prices
Tend to strengthen; scrap highest since April.

Production
Up 6 points last week to 56½ per cent.

■ OPTIMISM in the steel industry is increasing. Ingot production has moved 2 points ahead of the late-June rate to equal the best previous level so far this year, and demand is sustained or higher in most directions.

Most encouraging market feature is maintenance of business in relatively good volume despite restricted needs of some normally heavy consumers. This results from continued strong support from miscellaneous steel users who are taking up a large part of the slack in automotive and railroad requirements. Building and engineering construction also is a major sustaining influence.

Disregarding the holiday week, steelmaking now has expanded for nine weeks. This restores it to the same level as prevailed the middle of March, when it started a nine-weeks' decline. A similar trend existed a year ago, operations tapering for nine weeks but being three weeks later than this year in starting to recover.

Last week's rate of 56½ per cent compares with 36 per cent in the corresponding 1938 period. Subsequent recovery last year carried operations to a peak of 63 per cent in November. While this figure has not been matched since then, prospects are good for exceeding it before the end of 1939. Schedules of close to 60 per cent are indicated for the next several weeks.

Delay In Production Of New Auto Models Seen

While automotive shipments reflect the fact the majority of assembly plants are closed for model changes, steel releases from partsmakers gradually are increasing. The strike of General Motors tool and die workers still is a restrictive factor, however, and introduction of 1940 models by the industry in general probably will be somewhat later than was expected 60 days ago.

Motorcar assemblies totaled only 47,420 units last week, a drop of nearly 15,000 from the week before and comparing with 32,070 a year ago. Chrysler accounted for most of the reduction, from 18,320 units to 5900, on completion of 1939 model production of some cars. General Motors was practically unchanged at 18,450 units, Ford cut from 18,500 to 17,000 and all others slipped from 6365 to 6070.

Railroad buying of steel and equipment continues restricted. Erie has placed 3777 tons of rails and the Atlantic Coast Line and Seaboard Air Line each has ordered two diesel-electric locomotives. The Seaboard also has closed on 14 passenger cars. New York board of transportation is inquiring for 150 to 300 subway cars.

Farm equipment builders are busier, particularly in tractor departments, and are better steel users. Requirements of domestic appliance makers have followed this year's upturn in residential building and are comparatively heavy for the season. Steel sales out of warehouse also show strong resistance to seasonal influences which usually restrict demand during this period.

Prices Of Some Steel Products Await Test

Heavy coverage in past weeks precludes a thorough test of prices of some steel products. In other items stability is more pronounced, and a gradually firmer undertone is appearing in most markets. Part of this strengthening is attributable to improved demand. Size extras on wire nails are being revised, the first change since 1927.

Scrap prices are up further in several leading districts. This advances the scrap composite 12 cents to $14.87, highest since early April. A year ago the composite was $13.50 and heading upward. On the other hand, the finished steel composite is unchanged at $55.60 and compares with $57.20 a year ago.

Although tending to taper seasonally, tin plate production holds above that of most other products. Current output of 65 per cent is below the June average.

Most districts shared in latest steelmaking gains. Pittsburgh was up 4 points to 48 per cent and Chicago rose 3½ points to 53½. Other increases were 1 point to 41 in eastern Pennsylvania, 13 points to 56 at Cleveland, 9½ points to 46½ at Buffalo, 1 point to 81 at Birmingham, 10 points to 31 at Cincinnati and 2½ points to 47½ at St. Louis. Unchanged districts included Wheeling at 79, New England at 40, Detroit at 64 and Youngstown at 53.

COMPOSITE MARKET AVERAGES

	July 22	July 15	July 8	One Month Ago June, 1939	Three Months Ago April, 1939	One Year Ago July, 1938	Five Years Ago July, 1934
Iron and Steel	$35.86	$35.85	$35.81	$35.69	$36.34	$36.32	$32.32
Finished Steel	55.60	55.60	55.60	55.70	56.50	57.20	54.05
Steelworks Scrap..	14.87	14.75	14.54	14.49	14.98	13.06	10.30

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	July 22, 1939	June, 1939	April, 1939	July, 1938
Steel bars, Pittsburgh	2.15c	2.15c	2.25c	2.25c
Steel bars, Chicago	2.15	2.15	2.25	2.25
Steel bars, Philadelphia	2.47	2.47	2.57	2.57
Iron bars, Terre Haute, Ind.	2.05	2.05	2.15	2.15
Shapes, Pittsburgh	2.10	2.10	2.10	2.10
Shapes, Philadelphia	2.215	2.215	2.215	2.215
Shapes, Chicago	2.10	2.10	2.10	2.10
Plates, Pittsburgh	2.10	2.10	2.10	2.10
Plates, Philadelphia	2.15	2.15	2.15	2.15
Plates, Chicago	2.10	2.10	2.10	2.10
Sheets, hot-rolled, Pittsburgh	2.00	2.00	2.15	2.15
Sheets, cold-rolled, Pittsburgh	3.05	3.05	3.20	3.20
Sheets, No. 24 galv., Pittsburgh	3.50	3.50	3.50	3.50
Sheets, hot-rolled, Gary	2.00	2.00	2.15	2.15
Sheets, cold-rolled, Gary	3.05	3.05	3.20	3.20
Sheets, No. 24 galv., Gary	3.50	3.50	3.50	3.50
Bright bess., basic wire, Pitts.	2.60	2.60	2.60	2.60
Tin plate, per base box, Pitts.	$5.00	$5.00	$5.00	$5.35
Wire nails, Pittsburgh	2.45	2.45	2.45	2.45

Semifinished Material

Sheet bars, Pittsburgh, Chicago	$34.00	$34.00	$34.00	$34.00
Slabs, Pittsburgh, Chicago	34.00	34.00	34.00	34.00
Rerolling billets, Pittsburgh	34.00	34.00	34.00	34.00
Wire rods, No. 5 to $\frac{9}{32}$-inch, Pitts.	43.00	43.00	43.00	43.00

Pig Iron

	July 22, 1939	June, 1939	April, 1939	July, 1938
Bessemer, del. Pittsburgh	$22.34	$22.34	$22.34	$21.34
Basic, Valley	20.50	20.50	20.50	19.50
Basic, eastern, del. Philadelphia	22.34	22.34	22.34	21.34
No. 2, foundry, Pittsburgh	22.21	22.21	22.21	21.21
No. 2, foundry, Chicago	21.00	21.00	21.00	20.00
Southern No. 2, Birmingham	17.38	17.38	17.38	16.38
Southern No. 2, del. Cincinnati	20.89	20.89	20.89	19.89
No. 2X, del. Phila. (differ. av.)	23.215	23.215	23.215	22.215
Malleable, Valley	21.00	21.00	21.00	20.00
Malleable, Chicago	21.00	21.00	21.00	20.00
Lake Sup., charcoal, del. Chicago	28.34	28.34	28.34	28.34
Gray forge, del. Pittsburgh	21.17	21.17	21.17	20.17
Ferromanganese,del. Pittsburgh	85.33	85.33	85.33	97.77

Scrap

Heavy melting steel, Pittsburgh	$15.75	$15.00	$15.50	$13.75
Heavy melt. steel, No. 2, E. Pa	13.75	13.125	13.65	12.20
Heavy melting steel, Chicago	13.75	13.40	13.35	12.05
Rails for rolling, Chicago	17.75	17.65	17.25	17.05
Railroad steel specialties, Chicago	15.50	15.30	15.35	14.95

Coke

Connellsville, furnace, ovens	$3.75	$3.75	$3.75	$3.75
Connellsville, foundry, ovens	5.00	5.00	5.00	5.00
Chicago, by-product fdry., del.	10.50	10.50	10.50	10.80

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Hot Rolled

Pittsburgh	2.00c
Chicago, Gary	2.00c
Cleveland	2.00c
Detroit, del.	2.10c
Buffalo	2.00c
Sparrows Point, Md.	2.00c
New York, del.	2.24c
Philadelphia, del.	2.17c
Granite City, Ill.	2.10c
Middletown, O.	2.00c
Youngstown, O.	2.00c
Birmingham	2.00c
Pacific Coast points	2.50c

Cold Rolled

Pittsburgh	3.05c
Chicago, Gary	3.05c
Buffalo	3.05c
Cleveland	3.05c
Detroit, delivered	3.15c
Philadelphia, del.	3.37c
New York, del.	3.39c
Granite City, Ill.	3.15c
Middletown, O.	3.05c
Youngstown, O.	3.05c
Pacific Coast points	3.65c

Galvanized No. 24

Pittsburgh	3.50c
Chicago, Gary	3.50c
Buffalo	3.50c
Sparrows Point, Md.	3.50c
Philadelphia, del.	3.67c
New York, delivered	3.74c
Birmingham	3.50c
Granite City, Ill.	3.60c
Middletown, O.	3.50c
Youngstown, O.	3.50c
Pacific Coast points	4.00c

Black Plate, No. 29 and Lighter

Pittsburgh	3.05c
Chicago, Gary	3.05c
Granite City, Ill.	3.15c

Long Ternes No. 24 Unassorted

Pittsburgh, Gary	3.80c
Pacific Coast	4.50c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.75c	3.35c
Chicago, Gary	2.75c	3.35c
Granite City, Ill.	2.85c	3.45c
Youngstown, O.	2.75c	3.35c
Cleveland	2.75c	3.35c
Middletown, O.	2.75c	3.35c
Pacific Coast	3.35c	3.95c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	24.00	35.00
Cold stp.	22.00	22.50	32.00	52.00

Steel Plate

Pittsburgh	2.10c
New York, del.	2.19-2.29c
Philadelphia, del.	2.15c
Boston, delivered	2.42c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, base	2.10c
Sparrows Point, base	2.10c
Claymont, Del.	2.10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast points	2.60c

Steel Floor Plates

Chicago	3.35c
Gulf ports	3.70c
Pacific Coast ports	3.95c
Pittsburgh	3.35c

Standard Shapes

Pittsburgh	2.10c
Philadelphia, del.	2.21½c
New York, del.	2.27c
Boston, delivered	2.41c
Bethlehem	2.10c
Chicago	2.10c
Cleveland, del.	2.30c
Buffalo	2.10c
Gulf ports	2.45c
Birmingham	2.10c
St. Louis, del.	2.34c
Pacific Coast points	2.70c

Tin and Terne Plate

Tin Plate, Coke (base box)

Pittsburgh, Gary, Chicago	$5.00
Granite City, Ill.	5.10

Mfg. Terne Plate (base box)

Pittsburgh, Gary, Chicago	$4.30
Granite City, Ill.	4.40

Bars

Soft Steel

(Base, 3 tons or over)

Pittsburgh	2.15c
Chicago or Gary	2.15c
Duluth	2.25c
Birmingham	2.15c
Cleveland	2.15c
Buffalo	2.15c
Detroit, delivered	2.25c
Philadelphia, del.	2.47c
Boston, delivered	2.52c
New York, del.	2.49c
Gulf ports	2.50c
Pacific Coast points	2.75c

Rail Steel

(Base, 15 tons or over)

Pittsburgh	2.00c
Chicago or Gary	2.00c
Detroit, delivered	2.10c
Cleveland	2.00c

Buffalo	2.00c
Birmingham	2.00c
Gulf ports	2.35c
Pacific Coast points	2.60c

Iron

Chicago, Terre Haute	2.05c
Philadelphia	2.37c
Pittsburgh, refined	3.50-8.00c

Reinforcing

New billet, straight lengths, quoted by distributors

Chicago, Gary, Buffalo, Cleve., Birm., Young., Sparrows Pt., Pitts.	1.80-2.05c
Detroit, delivered	1.90-2.15c
Gulf ports	2.20-2.40c
Pacific coast ports	2.50c
Philadelphia, del.	1.97-2.22c

Rail steel, straight lengths, quoted by distributors

Pittsburgh, Gary Chicago, Buffalo, Cleveland, Birm.	1.75c-1.90c
Detroit, delivered	1.85c-2.00c
Gulf ports	2.10-2.225c
Pacific Coast	2.35c

Wire Products

Pitts-Cleve.-Chicago-Birm. base per 100 lb. keg in carloads

Standard wire nails	$2.40
Cement coated nails	$2.40
(Per pound)	
Polished staples	3.10c
Galv. fence staples	3.35c
Galv. barbed wire, standard 12½ gage two-point hog, 80-rod spool $2.74; two-point cattle, 80-rod spool	$2.58
Annealed fence wire	2.90c
Galv. fence wire	3.30c
Woven wire fencing (base C. L. column)	67.00
Single loop bale ties, (base C. L. column)	56.00

To Manufacturing Trade

Base, Pitts. - Cleve. - Chicago-Birmingham (except spring wire)

Bright bess., basic wire	2.60c
Galvanized wire	2.65c
Spring wire	3.20c

Worcester, Mass., $2 higher on bright basic and spring wire.

Cut Nails

Carloads, Pittsburgh $3.60

Cold-Finished Bars

	Carbon	Alloy
Pittsburgh	2.65c	3.35c
Chicago	2.65c	3.35c
Gary, Ind.	2.65c	3.35c
Detroit	2.70c	*3.45c
Cleveland	2.65c	3.35c
Buffalo	2.65c	3.35c

* Delivered.

Alloy Bars (Hot)

(Base, 3 tons or over)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	2.70c
Detroit, delivered	2.80c

Alloy	S.A.E.	Diff.	S.A.E.	Alloy Diff.
2000		0.35	3100	0.70
2100		0.75	3200	1.35
2300		1.55	3300	3.80
2500		2.25	3400	3.20

4100 0.15 to 0.25 Mo.	0.55
4600 0.20 to 0.30 Mo. 1.50-2.00 Ni.	1.10
5100 0.80-1.10 Cr.	0.45
5100 Cr. spring flats	0.15
6100 bars	1.20
6100 spring flats	0.85
Cr. N., Van.	1.50
Carbon Van.	0.85
9200 spring flats	0.15
9200 spring rounds, squares	0.40

Electric furnace up 50 cents.

Strip and Hoops

(Base, hot strip, 1 ton or over; cold, 3 tons or over)

Hot Strip, 12-inch and less

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, Birmingham	2.00c
Detroit, del.	2.10c
Philadelphia, del.	2.32c
New York, del.	2.36c
Cooperage hoop, Youngs., Pitts.; Chicago, Birm.	2.10c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown	2.80c
Chicago	2.90c
Detroit, del.	2.90c
Worcester, Mass.	3.00c

Carbon	Cleve., Pitts.
0.26—0.50	2.80c
0.51—0.75	4.30c
0.76—1.00	6.15c
Over 1.00	8.35c

Worcester, Mass. $4 higher.

Commodity Cold-Rolled Strip

Pitts.-Cleve.-Youngstown	2.95c
Detroit, del.	3.05c
Worcester, Mass.	3.95c

Lamp stock up 10 cents.

Rails, Fastenings

(Gross Tons)

Standard rails, mill	$40.00
Relay rails, Pittsburgh 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pitts., Chicago, B'ham.	$40.00
Do., rerolling quality	39.00

Cents per pound

Angle bars, billet, mills	2.70c
Do., axle steel	2.35c
Spikes, R. R. base	3.00c
Track bolts, base	4.15c
Car axles forged, Pitts., Chicago, Birmingham.	3.15c
Tie plates, base	2.15c

Base, light rails 25 to 60 lbs., 20 lbs., up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists, carloads 5% up; full containers additional 10%.

Carriage and Machine

½ x 6 and smaller	68.5 off
Do. larger, to 1-in.	66 off
Do. 1⅛ and larger	64 off
Tire bolts	52.5 off

Stove Bolts

In packages with nuts attached 72.5 off; in packages with nuts separate 72.5-12½ off; bulk 84 off on 15,000 of 3-inch and shorter, or 5000 over 3-in.

Step bolts	60 off
Elevator bolts	60 off
Plow bolts	68.5 off

Nuts

Semifinished hex.	U.S.S.	S.A.E.
6-inch and less	67	70
⅞-1-inch	64	65
1⅛ and larger	62	62

Hexagon Cap Screws

Upset, 1-in., smaller ..... 67.5 off

Square Head Set Screws

Upset, 1-in., smaller	75.0 off
Headless set screws	70.0 off

Piling

Pitts., Chgo., Buffalo	2.40c
Gulf ports	2.75c

Rivets, Washers

Structural, Pittsburgh, Cleveland, Chicago	3.40c
⅞-inch and smaller, 11 and 12	63½ 54
Pitts., Chi., Cleve.	65-10 off
Wrought washers, Pitts., Chi., Phila., to jobbers and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75 off	

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less on lap weld, 1 point less on butt weld. Chicago delivery 2½ and 1½ less, respectively. Wrought pipe, Pittsburgh base.

Butt Weld

Steel In.	Blk.	Galv.
½	63½	54
¾	66½	58
1—3	68½	60½
Iron		
¾	30	13
1—1¼	34	19
1½	38	21½
2	37½	21

Lap Weld

Steel		
2	61	52½
2½—3	64	55½
3½—6	66	57½
7 and 8	65	55½
9 and 10	64½	55
Iron		
2	30½	15
2½—3½	31½	17½
4	33½	21
4½—8	32½	20
9—12	28½	15

Line Pipe

Steel		
1 to 3, butt weld		67½
2, lap weld		60
2½ to 3, lap weld		63
3½ to 6, lap weld		65
7 and 8, lap weld		64
10-inch lap weld		63½
12-inch, lap weld		62½
Iron	Blk.	Galv.
¾ butt weld	25	7
1 and 1¾ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld	27½	14
9 to 12 lap weld	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet; f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Welded

Sizes	Gage	Steel	Charcoal Iron
1½ "O.D.	13	$ 9.72	$23.71
1¾ "O.D.	13	11.06	22.93
2" O.D.	13	12.38	19.35
2¼ "O.D.	13	13.79	21.68
2¼ "O.D.	12	15.16	.....
2½ "O.D.	12	16.58	26.57
2¾ "O.D.	12	17.54	29.00
3" O.D.	12	18.35	31.36
3½ "O.D.	11	23.15	39.81
4" O.D.	10	28.66	49.90
5" O.D.	9	44.25	73.93
6" O.D.	7	68.14	.....

Seamless

Sizes	Gage	Hot Rolled	Cold Drawn
1 "O.D.	13	$ 7.82	$ 9.01
1¼ "O.D.	13	9.26	10.67
1½ "O.D.	13	10.23	11.79
1¾ "O.D.	13	11.64	13.42
2" O.D.	13	13.04	15.03
2¼ "O.D.	13	14.54	16.76
2¼ "O.D.	12	16.01	18.45
2½ "O.D.	12	17.54	20.21
2¾ "O.D.	12	18.59	21.42
3" O.D.	12	19.50	22.48
3½ "O.D.	11	24.62	28.37
4" O.D.	10	30.54	35.20
4½ "O.D.	10	37.35	43.04
5" O.D.	9	46.87	54.01
6" O.D.	7	71.96	82.93

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in., & over, Birm.	$42.00-43.00
4-in., Birmingham	45.00-46.00
4-in., Chicago	53.80-54.80
6-in. & over, Chicago	50.80-51.80
6-in. & over, east fdy.	46.00
Do., 4-in.	49.00

Class A Pipe $3 over Class B
Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Rerolling Billets, Slabs

(Gross Tons)

Pittsburgh, Chicago, Gary, Cleve., Buffalo, Young., Birm., Sparrows Point	$34.00
Duluth (billets)	36.00
Detroit, delivered	36.00

Forging Quality Billets

Pitts., Chi., Gary, Cleve., Young., Buffalo, Birm.	40.00
Duluth	42.00

Sheet Bars

Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago	34.00
Detroit, delivered	36.00

Wire Rods

Pitts., Cleveland, Chicago, Birmingham No. 5 to ⅜-inch incl.	43.00
Do., over ⅜ to 41/64-in.incl.	48.00

Worcester up $2; Galveston up $6; Pacific Coast up $9.

Skelp

Pitts., Chi., Young., Buff Coatesville, Sparrows Pt.	1.90c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.75
Connellsville, fdry.	4.75- 5.50
Connell. prem. fdry.	5.75- 6.25
New River fdry.	6.50- 6.75
Wise county fdry.	5.50- 5.75
Wise county fur.	4.50- 4.75

By-Product Foundry

Newark, N. J., del.	10.88-11.35
Chi., ov., outside del.	9.75
Chicago, del.	10.50
Terre Haute, del.	10.00
Milwaukee, ovens	10.50
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens	7.00
Indianapolis, del.	10.00
Cincinnati, del.	9.75
Cleveland, del.	10.30
Buffalo, del.	10.50
Detroit, del.	10.25
Philadelphia, del.	10.65

Coke By-Products

Spot, gal., freight allowed east of Omaha

Pure and 90% benzol	16.00c
Toluol, two degree	22.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums)	16.25c
Do. (450 lbs)	15.25c

Eastern Plants, per lb.

Naphthalene flakes, balls, bbls. to jobbers	5.75c

Per ton, bulk, f.o.b. port

Sulphate of ammonia	$28.00

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$22.00	$22.50	$21.50	$23.00
Birdsboro, Pa.	22.00	22.50	21.50	23.00
Birmingham, Ala.‡	17.38	.....	16.38	22.00
Buffalo	21.00	21.50	20.00	22.00
Chicago	21.00	21.00	20.50	21.50
Cleveland	21.00	21.00	20.50	21.50
Detroit	21.00	21.00	20.50	21.50
Duluth	21.50	21.50	.....	22.00
Erie, Pa.	21.00	21.50	20.50	22.00
Everett, Mass.	22.00	22.50	21.50	23.00
Granite City, Ill.	21.00	21.00	20.50	21.50
Hamilton, O.	21.00	21.00	20.50	.....
Neville Island, Pa.	21.00	21.00	20.50	21.50
Provo, Utah	19.00	.....	.....	.....
Sharpsville, Pa.	21.00	21.00	20.50	21.50
Sparrow's Point, Md.	22.00	.....	21.50	.....
Swedeland, Pa.	22.00	22.50	21.50	23.00
Toledo, O.	21.00	21.00	20.50	21.50
Youngstown, O.	21.00	21.00	20.50	21.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:				
Akron, O., from Cleveland	22.39	22.39	21.89	22.89
Baltimore from Birmingham	22.78	.....	21.66	.....
Boston from Birmingham	22.12	.....	.....	.....
Boston from Everett, Mass.	22.50	23.00	22.00	23.50
Boston from Buffalo	22.50	23.00	22.00	23.50
Brooklyn, N. Y., from Bethlehem	24.50	25.00	.....	.....
Canton, O., from Cleveland	22.39	22.39	21.89	22.89
Chicago from Birmingham	†21.22	.....	.....	.....
Cincinnati from Hamilton, O.	21.24	22.11	21.61	.....
Cincinnati from Birmingham	21.06	.....	20.06	.....
Cleveland from Birmingham	21.32	.....	20.82	.....
Mansfield, O., from Toledo, O.	22.94	22.94	22.44	22.44
Milwaukee from Chicago	22.10	22.10	21.60	22.60
Muskegon, Mich., from Chicago, Toledo or Detroit	24.19	24.19	23.69	24.69
Newark, N. J., from Birmingham	23.15	.....	.....	.....
Newark, N. J., from Bethlehem	23.53	24.03	.....	.....
Philadelphia from Birmingham	22.46	.....	21.96	.....
Philadelphia from Swedeland, Pa.	22.84	23.34	22.34	.....
Pittsburgh district from Neville Island	Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	23.45	23.45	22.95	22.95

	No. 2 Fdry.	Malleable	Basic	Bessemer
St. Louis, northern	21.50	21.50	21.00	.....
St. Louis from Birmingham	†21.12	.....	20.62	.....
St. Paul from Duluth	23.63	23.63	.....	24.13

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $26.50, base; $27.74 delivered Philadelphia.

Gray Forge		Charcoal	
Valley furnace	$20.50	Lake Superior fur.	$25.00
Pitts. dist. fur	20.50	do., del. Chicago	28.34
		Lyles, Tenn.	23.50

†Silvery

Jackson county, O., base: 6-6.50 per cent $25.50; 6.51-7—$26.00; 7-7.50—$26.50; 7.51-8—$27.00; 8-8.50—$27.50; 8.51-9—$28.00; 9-9.50—$28.50; Buffalo, $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base; Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$60.80

First Quality

Pa., Ill., Md., Mo., Ky.	47.50
Alabama, Georgia	47.50
New Jersey	52.50

Second Quality

Pa., Ill., Ky., Md., Mo.	42.75
Georgia, Alabama	34.20
New Jersey	49.00

Ohio

First quality	39.90
Intermediate	36.10
Second quality	31.35

Malleable Bung Brick

All bases	$56.05

Silica Brick

Pennsylvania	$47.50
Joliet, E. Chicago	55.10
Birmingham, Ala.	47.50

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$28.00
Wire cut	$26.00

Magnesite

Imported dead - burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Do. domestic	40.00
Do., f.o.b. Chewelah, Wash., net ton, bulk	22.00
net ton, bags	26.00
Quickset magnesite grains, f.o.b. Chewelah, Wash., net, bulk	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$47.00
Chem. bonded chrome	47.00
Magnesite brick	67.00
Chem. bonded magnesite	57.00

Fluorspar

Washed gravel, duty pd., tide, net ton	$21.00-21.50
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail	18.00
Do. barge	19.00
No. 2 lump	18.00-19.00

Ferroalloy Prices

Ferromanganese, 78-82%, tidewater, duty pd. $80.00
Do., del. Pittsburgh 85.33

Spiegeleisen, 19-21% dom. Palmerton, Pa., spot 28.00
Do., 26-28%, Palmerton 33.00

Ferrosilicon, 50% freight allowed, c.l. 69.50
Do., ton lot 80.50
Do., 75 per cent 126.00
Spot, $5 a ton higher.

Silicoman, 2½ carbon 88.00
2% carbon, 93.00; 1%, 103.00
Contract ton price $11 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars 1.60-1.65

Ferrovanadium, 35 to 40%, lb., cont. 2.70-2.80-2.90

Ferrophosphorus, gr. ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., contained cr., del. carlots 10.50c
Do., ton lots 11.25c
Do., less-ton lots 11.50c

67-72% carloads, 2% carbon, per lb. contained chrome 16.50c
Do., ton lots 17.25c
Do., less-ton lots 17.75c

	Carloads	Ton lots	Less ton
2% carb.	16.50c	17.25c	17.50c
1% carb.	17.50c	18.25c	18.50c
0.10% carb.	18.50c	19.25c	19.50c
0.20% carb.	19.50c	20.25c	20.50c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40-45%, lb., con. ti., f.o.b. Niagara Falls, ton lots $1.23
Do., less-ton lots 1.25
20-25% carbon, 0.10 max., ton lots, lb. 1.35
Do, less-ton lots 1.40
Spot 5c higher

Ferrocolumbium, 50-60%, contract, lb. con. col., f.o.b. Niagara Falls $2.25
Do., less-ton lots 2.30
Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill 0.80

Ferro-carbon-titanium, 15-18%, ti., 6-8% carb., carlots, contr., net ton $142.50
Do, spot 145.00
Do, contract, ton lots 145.00
Do, spot, ton lots 150.00

15-18% ti., 3-5% carbon, carlots, contr., net ton 157.50
Do, spot 160.00
Do, contract, ton lots. 160.00
Do, spot, ton lots 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c
Spot ½c lb. higher

Chromium Briquets, contract, any quantity, freight allowed, lb. 7.25c
Do, spot carlots, bulk 7.50c
Do, ton lots 8.00c
Do., less-ton lots 8.25c

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. $2.00
Do, smaller lots 2.10

Vanadium Pentoxide, contract, lb. contained $1.10
Do, spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 80.00c
Do, spot 85.00c

88% chrome, contract 79.00c
Do, spot 84.00c

Silicon Metal, 1% iron, contract, carlots, 2 x ⅛-in., lb. 14.00c
Do., 2% 12.50c
Spot ¼c higher

Silicon Briquets, contract carloads freight allowed, ton $69.50
Carload, spot 74.50
Less-ton lots, lb. 3.75c

Manganese Briquets, contract carloads, bulk freight allowed, lb. 4.50c
Ton lots 5.00c
Less-ton lots 5.25c
Spot ¼c higher

Zirconium Alloy, 12-15%, contract, carloads, gross ton $97.50
Do, spot 102.50

34-40%, contract, carloads, lb., alloy 14.00c
Do, ton lots 15.00c
Do, less-ton lots 16.00c
Spot ¼c higher

Molybdenum Powder, 99%, f.o.b. York, Pa. 200-lb. kegs, lb. $2.60
Do, 100-200 lb. lots 2.75
Do, under 100-lb. lots 3.00

Molybdenum Oxide Briquets, 48-52% molybdenum, per pound contained, f.o.b. producers' plant 80.00c

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-in. & Over	Structural Shapes	Floor Plates	Sheets: Hot Rolled	Sheets: Cold Rolled	Sheets: Galv. No. 24	Cold Rolled Strip	Cold Drawn Bars: Carbon	Cold Drawn Bars: S A E 2300	Cold Drawn Bars: S A E 3100
Boston	3.88	4.06	5.06	3.85	3.85	5.66	3.71	4.78	4.61	3.46	4.13	8.63	7.23
New York (Met.)	3.84	3.96	3.96	3.76	3.75	5.56	3.40	4.60	4.50	3.51	4.09	8.59	7.19
Philadelphia	3.60	3.60	4.10	3.40	3.40	5.00	3.40	4.55	4.28	3.51	4.06	8.56	7.16
Baltimore	3.70	3.85	3.80	3.55	3.55	5.00	3.55	4.90	5.05	....	4.05	....	....
Norfolk, Va.	3.90	4.00	....	3.75	3.75	5.20	3.75	....	5.40	....	4.15	....	....
Buffalo	3.35	3.82	3.82	3.62	3.40	5.25	3.35	4.40	4.40	3.42	3.75	8.15	6.75
Pittsburgh	3.35	3.60	3.60	3.40	3.40	5.00	3.35	....	4.50	3.35	3.65	8.35	6.95
Cleveland	3.25	3.50	3.50	3.40	3.58	5.18	3.35	4.55	4.62	3.20	3.75	8.15	6.75
Detroit	3.33	3.43	3.68	3.60	3.65	5.27	3.43	4.50	4.59	3.40	3.80	8.45	7.05
Cincinnati	3.60	3.67	3.67	3.65	3.68	5.28	3.42	....	4.57	3.45	4.00	8.50	7.10
Chicago	3.50	3.60	3.60	3.55	3.55	5.15	3.35	4.30	4.25	3.50	3.75	8.15	6.75
Twin Cities	3.75	3.85	3.85	3.80	3.80	5.40	3.60	4.95	4.50	3.83	4.34	8.84	7.44
Milwaukee	3.63	3.73	3.73	3.68	3.68	5.28	3.48	4.43	4.38	....	3.88	8.38	6.98
St. Louis	3.62	3.72	3.72	3.47	3.47	5.07	3.38	4.32	4.52	3.61	4.02	8.52	7.12
Kansas City	4.05	4.15	4.15	4.00	4.00	5.60	3.90	....	5.00	....	4.30	....	....
Memphis	3.90	4.00	4.00	3.95	3.95	5.71	3.75	....	5.00	....	4.31	....	....
Chattanooga	3.80	3.90	3.90	3.85	3.85	5.80	3.65	....	4.40	....	4.39	....	....
Tulsa, Okla.	4.54	4.64	4.64	4.41	4.41	6.01	4.32	....	5.39	....	4.79	....	....
Birmingham	3.50	3.60	3.60	3.55	3.55	5.88	3.35	....	4.85	....	4.43	....	....
New Orleans	3.85	4.65	4.65	3.80	3.80	5.75	4.10	....	4.60	5.00	5.10	....	....
Houston, Tex.	3.50	5.85	6.25	4.05	4.05	5.65	3.95	.	5.25	....	.. .	....	....
Seattle	3.90	4.10	5.45	3.85	3.95	5.75	3.80	6.50	5.00	....	5.60	....	....
Portland, Oreg.	4.00	4.40	6.10	4.00	4.00	5.50	3.95	6.50	4.75	....	5.85	....	....
Los Angeles	4.00	4.50	6.35	4.00	4.00	6.20	4.20	6.30	5.00	4.45	6.00	10.40	9.55
San Francisco	3.50	3.90	6.00	3.45	3.45	5.05	3.45	6.40	5.15	....	6.55	10.65	9.80

	S A E Hot-rolled Bars (Unannealed): 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series
Boston	4.18	7.50	6.05	5.80	7.90
New York (Met.)	4.04	7.35	5.90	5.65	....
Philadelphia	3.85	7.31	5.86	5.61	7.71
Baltimore	3.85	....	....	....	....
Norfolk, Va.	....	....	....	....	....
Buffalo	3.55	7.10	5.65	5.40	7.50
Pittsburgh	3.40	7.35	5.95	5.50	7.60
Cleveland	3.30	7.30	5.85	5.85	7.70
Detroit	3.38	7.42	5.97	5.72	7.19
Cincinnati	3.65	7.44	5.99	5.74	7.84
Chicago	3.70	7.10	5.65	5.40	7.50
Twin Cities	3.95	7.45	6.00	6.09	8.19
Milwaukee	3.78	7.33	5.88	5.63	7.73
St. Louis	3.82	7.47	6.02	5.77	7.87
Seattle	5.65	....	7.80	7.65	8.45
Portland, Oreg.	5.70	....	7.80	7.65	8.50
Los Angeles	4.65	9.40	8.55	8.40	9.05
San Francisco	4.50	9.65	8.80	8.65	9.30

BASE QUANTITIES

Soft Bars, Bands, Hoops, Plates, Shapes, Floor Plates, Hot Rolled Sheets and SAE 1035-1050 Bars: Base, 400-1999 pounds, except 0-1999 pounds (hot rolled sheets only) in New York; 300-1999 pounds in Los Angeles; 0-299 pounds (hoops only) in San Francisco; 300-4999 pounds in Portland, Seattle; 400-14,999 pounds in Twin Cities; 400-3999 pounds in Birmingham.

Cold Rolled Sheets: Base, 400-1499 pounds in Chicago, Cincinnati, Cleveland, Detroit, New York and St. Louis; 450-3749 pounds in Boston; 500-1499 pounds in Buffalo; 1000-1999 pounds in Philadelphia; 300-4999 pounds in San Francisco and Portland; any quantity in Twin Cities.

Galvanized Sheets: Base, 0-1499 pounds in New York, Tulsa; 150-1499 pounds in Cleveland, Pittsburgh; 1-9 bundles in Baltimore, Norfolk; 1-6 bundles in Los Angeles; 300-4999 pounds in Portland, Seattle, San Francisco; 450-3749 pounds in Boston; 500-1499 pounds in Birmingham, Chicago, Cincinnati, Detroit, St. Louis; 1500 pounds and over in Chattanooga, Philadelphia; any quantity in Twin Cities.

Cold Rolled Strip: No base quantity; extras apply on lots of all size.

Cold Finished Bars: Base, 1000 pounds and over, except 0-299 pounds in San Francisco.

SAE Hot Rolled Alloy Bars: Base, 1000 pounds and over, except 0-4999 pounds in San Francisco; 0-1999 in Portland.

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, July 20

Export Prices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports £ s d	Quoted in dollars at current value	Continental Channe or North Sea ports, gross tons **Quoted in gold pounds sterling £ s d
Foundry, 2.50-3.00 Si.	$23.40 5 0 0	$17.89	2 2 0
Basic bessemer	....	19.59	2 6 0
Hematite, Phos. .03-.05	23.57 5 5 0*	.....	.....
Billets	$34.52 7 7 6	$38.34	4 10 0
Wire rods, No. 5 gage	53.24 11 7 6	43.67	5 2 6
Standard rails	$44 46 9 10 0	$48.99	5 15 0
Merchant bars	2.30c 11 0 0	1.95c	5 2 6
Structural shapes	2.09c 10 0 0	1.76c to 1.85c	4 12 6 to 4 17 6
Plates, †¼ in. or 5 mm.	2.29c 10 18 9	2.14c to 2.33c	5 12 6 to 6 2 6
Sheets, black, 24 gage or 0.5 mm.	2.72c 13 0 0	2.95c	7 15 0°
Sheets, gal., 24 ga., corr.	3.29c 15 15 0	3.52c	9 5 0
Bands and strips	2.77c 13 5 0	1.95c to 2.00c	5 2 6 to 5 5 0
Plain wire, base	4.08c 19 10 0	2.33c to 2.76c	6 2 6 to 7 5 0
Galvanized wire, base	4.86c 23 5 0	2.99c to 3.09c	7 17 6 to 8 2 6
Wire nails, base	....	2.66c to 2.85c	7 0 0 to 7 10 0
Tin plate, box 108 lbs.	$ 4.74 1 0 3	....	.....

British ferromanganese $80.00 delivered Atlantic seaboard duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d			French Francs		Belgian Francs		Reich Mark
Fdy. pig iron, Si. 2.5	$23.17	4 19 0(a)	$18.00	679.30	$16.15	475	$25.28	63
Basic bess. pig iron	21.65	4 12 6(a)	.....	....	.....	...	27.89 (b)	69.50
Furnace coke	5.38	1 4 2	5.96	225	6.87	202	7.62	19
Billets	34.52	7 7 6	27.27	1,029	29.24	860	38.73	96.50
Standard rails	1.99c	9 10 0	1.69c	1,405	2.06c	1,375	2.38c	132
Merchant bars	2.42c	11 12 0††	1.56c	1,304	1.65c	1,100	1.98c	110
Structural shapes	2.17c	10 8 0††	1.52c	1,268	1.65c	1,100	1.93c	107
Plates, †¼-in. or 5 mm.	2.29c	10 19 3††	1.98c	1,650	2.06c	1,375	2.29c	127
Sheets, black	3.08c	14 15 0§	2.35c	1,958‡	2.36c	1,575‡	2.59c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	3.61c	17 5 0	3.30c	2,750	4.05c	2,700	6.66c	370
Plain wire	4.08c	19 10 0	2.26c	1,880	2.48c	1,650	3.11c	173
Bands and strips	2.58c	12 7 0††	1.73c	1,444	1.95c	1,300	2.29c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. °Close annealed. ††Rebate of 15s on certain conditions.

**Gold pound sterling carries a premium of 75 per cent over paper sterling.

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; †indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1.	†12.00
Bos. dock No. 1 exp.	13.75-14.00
New Eng. del. No. 1	14.00
Buffalo, No. 1	14.00-14.50
Buffalo, No. 2	12.00-12.50
Chicago, No. 1	13.50-14.00
Chicago, auto, no alloy	12.25-12.75
Chicago, No. 2 auto	10.50-11.00
Cincinnati, dealers	11.25-11.75
Cleveland, No. 1	14.50-15.00
Cleveland, No. 2	13.50-14.00
Detroit, No. 1	10.50-11.00
Detroit, No. 2	9.50-10.00
Eastern Pa., No. 1	15.50-16.00
Eastern Pa., No. 2	13.50-14.00
Federal, Ill.	10.50-11.00
Granite City, R. R.	11.50-12.00
Granite City, No. 2	10.25-10.75
Los Angeles, No. 1	12.50-13.00
Los Angeles, No. 2	11.50-12.00
L. A., No. 1 f.a.s.	14.50-15.00
L. A., No. 2 f.a.s.	13.00-13.50
N. Y. dock No. 1 exp.	12.00-12.50
Pitts., No. 1 (R. R.)	16.50-17.00
Pittsburgh, No. 1	15.50-16.00
Pittsburgh, No. 2	14.00-14.50
St. Louis, R. R.	11.50-12.00
St. Louis, No. 2	10.25-10.75
San Francisco, No. 1	13.00-13.50
Seattle, No. 1	11.00-12.00
Toronto, dirs. No. 1	9.25- 9.75
Valleys, No. 1	15.50-16.00

COMPRESSED SHEETS

Buffalo	12.00-12.50
Chicago, factory	12.50-13.00
Chicago, dealers	11.00-11.50
Cincinnati dealers	10.75-11.25
Cleveland	14.00-14.50
Detroit	11.75-12.25
E. Pa., new mat.	15.50
E. Pa., old mat.	12.00-12.50
Los Angeles	11.00-11.50
Pittsburgh	15.50-16.00
St. Louis	9.00- 9.50
Valleys	15.00-15.50

BUNDLED SHEETS

Buffalo, No. 1	11.00-11.50
Buffalo, No. 2	10.00-10.50
Cleveland	9.50-10.00
Los Angeles	14.00
Pittsburgh	14.00-14.50
St. Louis	7.00- 7.50
Toronto, dealers	8.00- 8.50

SHEET CLIPPINGS, LOOSE

Chicago	8.00- 8.50
Cincinnati, dealers	6.75- 7.25
Detroit	8.25- 8.75
†Los Angeles	3.75- 4.00
St. Louis	6.00- 6.50
Toronto, dealers	4.25- 4.75

BUSHELING

Buffalo, No. 1	12.00-12.50
Chicago, No. 1	12.25-12.75
Cincin., No. 1, deal.	7.00- 7.50
Cincinnati, No. 2	2.25- 2.75
Cleveland, No. 2	8.00- 8.50
Detroit, No. 1, new	10.50-11.00
Valleys, new, No. 1	13.50-14.00
Toronto, dealers	3.75- 4.25

MACHINE TURNINGS (Long)

Birmingham	†4.50- 5.00
Buffalo	6.25- 6.75
Chicago	7.00- 7.50
Cincinnati, dealers	4.50- 5.00
Cleveland, no alloy	7.50- 8.00
Detroit	5.75- 6.25
Eastern Pa.	8.50- 9.00
Los Angeles	4.50- 5.00
New York	†3.50- 4.00
Pittsburgh	9.25- 9.75
St. Louis	4.50- 5.00
Toronto, dealers	4.25- 4.75
Valleys	9.00- 9.50

SHOVELING TURNINGS

Buffalo	7.25- 7.75
Cleveland	7.50- 8.00
Chicago	7.00- 7.50
Chicago, spcl. anal.	8.00- 8.50
Detroit	6.50- 7.00
Pitts., alloy-free	11.00-11.50

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	3.35
Buffalo	7.25- 7.75
Cincinnati, dealers	3.25- 3.75
Cleveland	8.25- 8.75
Eastern Pa.	6.50- 7.00
Detroit	5.75- 6.25
New York	†2.50- 3.00
Pittsburgh	8.50- 9.00
Toronto, dealers	3.50- 4.00

AXLE TURNINGS

Boston district	†7.50
Buffalo	9.50-10.00
Chicago, elec. fur.	13.50-14.00
East. Pa., elec. fur.	13.00-13.50
St. Louis	9.00- 9.50
Toronto	4.00- 4.25

CAST IRON BORINGS

Birmingham	†6.00- 6.50
Boston dist. chem.	†4.50
Buffalo	7.25- 7.75
Chicago	6.50- 7.00
Cincinnati, dealers	3.25- 3.75
Cleveland	8.25- 8.75
Detroit	5.75- 6.25
E. Pa., chemical	10.00-11.00
New York	†3.50- 4.00
St. Louis	2.50- 3.00
Toronto, dealers	3.75- 4.25

RAILROAD SPECIALTIES

Chicago	15.25-15.75

ANGLE BARS—STEEL

Chicago	15.25-15.75
St. Louis	13.00-13.50

SPRINGS

Buffalo	15.50-16.00
Chicago, coil	16.00-16.50
Chicago, leaf	15.00-15.50
Eastern Pa.	18.00
Pittsburgh	18.50-19.00
St. Louis	14.00-14.50

STEEL RAILS, SHORT

Birmingham	†12.00-12.50
Buffalo	16.50-17.00
Chicago (3 ft.)	16.00-16.50
Chicago (2 ft.)	16.50-17.00
Cincinnati, dealers	17.50-18.00
Detroit	17.00-17.50
Los Angeles	15.00-15.50
Pitts., 3 ft. and less	18.50-19.00
St. Louis, 2 ft. & less	15.00-15.50

STEEL RAILS, SCRAP

Boston district	†13.50-14.00
Buffalo	15.50-16.00
Chicago	13.50-14.00
Cleveland	16.50-17.00
Pittsburgh	16.50-17.00
St. Louis	13.00-13.50
Seattle	16.00

FROGS, SWITCHES

Chicago	13.50-14.00
St. Louis, cut	13.00-13.50

ARCH BARS, TRANSOMS

St. Louis	13.50-14.00

PIPE AND FLUES

Chicago, net	8.50- 9.00
Cincinnati, dealers	6.50- 7.00

RAILROAD GRATE BARS

Buffalo	9.00- 9.50
Chicago, net	7.50- 8.00
Cincinnati, dealers	6.25- 6.75
Eastern Pa.	12.50-13.00
New York	†8.50- 9.00
St. Louis	8.00- 8.50

RAILROAD WROUGHT

Birmingham	†11.00-11.50
Boston district	†9.50-10.00
Eastern Pa., No. 1	16.00-16.50
St. Louis, No. 1	9.75-10.25
St. Louis, No. 2	11.50-12.00

FORGE FLASHINGS

Boston district	†7.50
Buffalo	12.00-12.50
Cleveland	11.00-11.50
Detroit	9.75-10.25
Los Angeles	9.00
Pittsburgh	14.00-14.50

FORGE SCRAP

Boston district	†6.50
Chicago, heavy	15.50-16.00

LOW PHOSPHORUS

Cleveland, crops	17.50-18.00
Eastern Pa., crops	17.00-17.50
Pitts., billet, bloom, slab crops	19.00-19.50

LOW PHOS. PUNCHINGS

Buffalo	15.50-16.00
Chicago	15.50-16.00
Cleveland	15.00-15.50
Eastern Pa., crops	17.50-18.00
Pittsburgh	17.50-18.00
Seattle	15.00

RAILS FOR ROLLING

5 feet and over

Birmingham	†14.00-15.00
Boston	15.00-15.50
Chicago	17.50-18.00
New York	†14.00-14.50
Eastern Pa.	17.00-17.50
St. Louis	16.00-16.50

STEEL CAR AXLES

Birmingham	†15.00-16.00
Boston district	†14.50
Chicago, net	17.00-17.50
Eastern Pa.	20.50-21.00
St. Louis	16.50-17.00

LOCOMOTIVE TIRES

Chicago (cut)	15.50-16.00
St. Louis, No. 1	12.25-12.75

SHAFTING

Boston district	†15.75-16.00
New York	†15.50-16.00
Eastern Pa.	20.50-21.00
St. Louis, 1¼-3¾".	15.50-16.00

CAR WHEELS

Birmingham	†13.50-14.00
Boston dist., iron	†10.00
Buffalo, steel	16.00-16.50
Chicago, iron	13.50-14.00
Chicago, rolled steel	14.50-15.00
Cincin., iron, deal.	13.00-13.50
Eastern Pa., iron	15.50-16.00
Eastern Pa., steel	18.00
Pittsburgh, iron	14.50-15.00
Pittsburgh, steel	18.50-19.00
St. Louis, iron	14.00-14.50
St. Louis, iron	14.00-14.50

NO. 1 CAST SCRAP

Birmingham	†13.00-13.50
Boston, No. 1 mach.	†11.00-11.50
N. Eng. del. No. 2	12.00-12.50
N. Eng. del. textile	12.50-13.00
Buffalo, cupola	13.50-14.00
Buffalo, mach.	15.25-15.75
Chicago, agri. net	9.50-10.00
Chicago, auto net	12.50-13.00
Chicago, railroad net	11.00-11.50
Chicago, mach. net	12.00-12.50
Cincin., mach. deal.	12.00-12.50
Cleveland, mach.	17.00-17.50
Detroit, cupola, net	13.00-13.50
Eastern Pa., cupola	16.00-16.50
E. Pa., mixed yard	13.50-14.00
Los Angeles, net	13.50-14.00
Pittsburgh, cupola	15.00-15.50
San Francisco, del.	13.50-14.00
Seattle	12.50-13.50
St. Louis, cupola	12.00-12.50
St. Louis, agri. mach.	14.00-14.50
St. L., No. 1 mach.	14.00-14.50
Toronto, No. 1, mach., net	12.00-12.50

HEAVY CAST

Boston dist. break.	†9.50
New England, del.	12.50-13.00
Buffalo, break.	11.50-12.00
Cleveland, break, net	13.00-13.50
Detroit, auto net	13.00-13.50
Detroit, break.	10.00-10.50
Eastern Pa.	15.00-15.50
Los Ang., auto, net.	13.50
New York, break.	†10.50-11.00
Pittsburgh, break	12.50-13.00

STOVE PLATE

Birmingham	†7.50- 8.00
Boston district	†8.00- 8.25
Buffalo	11.50-12.00
Chicago, net	7.75-8.25
Cincinnati, dealers	6.25- 6.75
Detroit, net	7.00- 7.50
Eastern Pa.	12.50-13.00
New York, fdy.	†10.00-10.50
St. Louis	7.50- 8.00
Toronto dealers, net	6.50- 7.00

MALLEABLE

Birmingham, R. R.	†10.50-11.00
New England, del.	11.50-12.50
Buffalo	14.00-14.50
Chicago, R. R.	15.00-15.50
Cincin., agri., deal.	10.75-11.25
Cleveland, rail	15.50-16.00
Eastern Pa., R. R.	15.00-16.50
Los Angeles	17.50-18.00
Pittsburgh, rail	15.75-16.25
St. Louis, R. R.	12.00-12.50

Iron Ore

Lake Superior Ore

Gross ton, 51½ %

Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbessemer	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbessemer	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-9.25
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, c.i.f. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00
No. Afr. low phos.	12.00
Swedish low phos.	12.00
Spanish No. Africa basic, 50 to 60% nom.	11.00
Tungsten, short ton unit, duty pd. nom.	18.50-19.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$23.00-24.00
Molybdenum ores sulphide, per lb. molybdenum contained, f.o.b. mill	0.75

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52% nom.	29.00
So. African, 50-52% nom.	29.00
Indian, 49-50%	27.00-28.00

Sheets, Strip

Sheet & Strip Prices, Pages 68, 69

Pittsburgh—Business is holding up well without benefit of heavy automotive releases. The latter are expected shortly, one report being that Ford soon will release steel for 250.000 cars, although some label this figure too high. Meanwhile support from other consumers is substantial. Sheet production has moved slightly above 55 per cent. Strip mills still lag at 35 per cent, although the outlook is better. Galvanized output is 54 per cent.

Cleveland — Sheet releases are slower in some instances, consumers finding storage facilities inadequate to accommodate all the tonnage ordered in May. Light demand from automotive interests also is restricting shipments, though motor car needs are expanding gradually. Miscellaneous users, including household utility makers, continue a strong support to business, and demand generally is sustained.

Chicago—Sheet and strip buying is slightly heavier, mostly by small miscellaneous users. Large consumers are well covered on current needs. Automotive releases tend upward but are slow since consumption is restricted. Heavier shipments are in prospect within 30 days.

Boston—New buying is light, with specifications fair. Prices on new business are stronger, notably on hot-rolled. Small tank fabricators are more active and are taking heavier shipments, while a Worcester district stamping shop has booked a substantial order from a midwestern refrigerator builder.

New York—What little new business is developing in sheets appears to be at firm prices. The market is far from a thorough test but shows underlying strength. Releases are off seasonally, particularly in galvanized. This is attributed to tapering in building construction, although such requirements and those for household appliances remain substantial.

Philadelphia—Sheet specifications are less active but fairly well diversified. Prices are stronger on new business, despite numerous contracts entered previously at concessions.

Buffalo—Sheet and strip production is steady near the June level, though automotive releases are slow to increase. Miscellaneous users are buying at a satisfactory rate. Prices are steady on new business.

Cincinnati—Production is above 50 per cent of capacity, with specifications broad. Automotive releases have been light, and demand for galvanized sheets also is lagging. Prices are firmer.

St. Louis—Specifications and new orders generally are satisfactory, except for the lag in automotive demand. Movement of galvanized sheets to rural areas, particularly in the South, has picked up appreciably since mid-June. Prices are steady.

Birmingham, Ala., — While still substantially one of the leading products, sheets have slackened somewhat the past week or two. Volume nevertheless is well maintained, and production is 80 per cent or slightly better. Because of approach of the cotton season, a pick-up is noted in production of strip, mainly cotton ties. Not a great deal is moving thus far, but is being stocked against demand soon to materialize.

Plates

Plate Prices, Page 68

Boston—Plate prices are firmer, although some scattered shading continues on medium black material. Quality plates, however, including fire-box, are generally firm. Shipyard releases are steady, but new buying is spotty. Floor plates are slightly more active, mostly in small lots, and specified work is also heavier. The Charlestown housing project, Boston, will take close to 300 tons for power plant boilers, stacks and miscellaneous needs.

New York—Plate prices continue to stiffen, concessions being less numerous and smaller. Reductions of $4 seem to have disappeared entirely. Buying is slow to improve. Oil company demand is slower than in June, and railroad specifications are practically nil. Outstanding tank work is 355 tons for New York Power & Light Corp.

Philadelphia — Prospective plate tonnage includes 5000 tons for naval repair ship VULCAN, on which New York Shipbuilding Corp. is low. Recent business includes a $1,300,000 navy contract for light armor plate awarded Henry Disston & Sons Inc. No action is reported yet on 21,000 tons on which the navy opened bids July 13. Little railroad tonnage is being figured. A sizable steel tonnage will be required for a Harrisburg, Pa., water line, although the amount is well below the 9000 tons involved had all steel been employed. The job went to Lock Joint Pipe Co., Ampere, N. J. Plate prices show a strong trend.

Birmingham, Ala., — Such construction as the Mobile river vehicular tunnel, and demand from tank manufacturers and miscellaneous requirements have combined to hold the plate market somewhat above expectations for this season. Output is about 70 per cent.

Seattle — American Bridge Co., Denver, is low to reclamation bureau for fabrication of eleven drum gates for the Coulee spillway, bidding $609,360. The project involves a total of 6800 tons of steel. Steel Construction Co., Portland, is low to U. S. engineer, Bonneville, for fabricating a steel dump scow, bidding $17,860, involving more than 100 tons of plates. General inquiry for plates is in small lots, shops reporting little activity.

San Francisco—The only plate letting of size went to unnamed interests, involved 200 tons for the bureau of supplies and accounts, Panama Canal. Bids have just been taken on 500 tons for a 42-inch welded steel pipe line for Sacramento, Calif. To date this year 18,549 tons have been placed, compared with 17,042 tons for the same period a year ago.

St. Louis—Tank plates are active, principally for requirements of the Illinois oil fields. Suppliers to this field are reported swamped with orders, one maker being several weeks behind on orders. Needs of barge and towboat builders still are large. Outlook for railroad buying this fall for repair work is more favorable.

Plate Contracts Placed

440 tons, 38-inch steel pipe, Bethlehem, Pa., to Bethlehem Steel Co.

355 tons, tanks, New York Power & Light Corp. at South Glens Falls, N. Y., and Canajoharie, N. Y., to Chicago Bridge & Iron Co., Chicago.

270 tons, two tanks, State Fuel Co., East Boston, Mass., to Chicago Bridge & Iron Co., Chicago.

200 tons, bureau of supplies and accounts, Panama Canal, C. Z., to unnamed interest.

105 tons, elevated 150,000-gallon tank, Lyman school, Westboro, Mass., to Chicago Bridge & Iron Co., Chicago.

100 tons, three oil storage tanks, Genearelli Coal & Oil Co., Westerly, R. I., to Chicago Bridge & Iron Co., Chicago.

100 tons, digester, St. Croix Paper Co., Woodland, Me., to Chicago Bridge & Iron Co., Chicago.

100 tons, 20 and 36-inch welded steel pipe, East bay municipal utility district, Oakland, Calif., to Steel Tank & Pipe Co., Berkeley, Calif.

Plate Contracts Pending

4300 tons, (also 2000 tons shapes and 500 tons steel castings) eleven drum gates for Coulee dam spillway; American Bridge Co., Denver, low.

500 tons, 42-inch welded steel pipe, Sacramento, Calif.; bids opened.

200 tons, boilers, flues and stack, power

plant, Charlestown housing project, Boston.

100 tons, standpipe, Brookfield, Mass.

100 tons or more, scow for United States engineer, Bonneville, Oreg.; Steel Construction Co., Portland, Oreg., low.

Bars

Bar Prices, Page 68

Cleveland — Demand is fairly heavy, comparing favorably with pre-holiday volume. Miscellaneous users continue the important factor in buying, although automotive orders gradually are increasing. Farm equipment builders are busier, this being reflected in bar needs.

Boston—Demand for commercial steel carbon bars is slightly better. Alloys continue relatively more active and cold-drawers stocks are generally light. Bars for some time have been the steadiest of heavier materials, in volume and price. Considerable small-lot tonnage has been placed by makers of small tools. Forging bars are moving fairly well.

New York—While showing some improvement since the holiday, commercial bar demand is quiet. Government specifications for special bars are active, but normally large buyers are taking little. This is particularly true of railroads and equipment builders. Machine tool operations are fair, much better than a year ago, although specifications currently are lagging.

Buffalo—Bar production is up slightly despite absence of sizable demand from the automotive industry. Improvement is principally from miscellaneous users, though structural requirements provide the leading outlet.

Pipe

Pipe Prices, Page 69

Pittsburgh—Production and shipments show little change from June levels. Standard pipe continues most active, with oil country products still lagging.

Cleveland—Operations of cast pipe producers are sustained, despite some falling off in new business the past 30 days. Backlogs are not extensive, but a fair number of small orders are appearing from adjacent states and are supporting comparatively good schedules. Business in standard steel pipe is heavier than a month ago.

Boston — Although the largest pending cast pipe tonnage, 1400 tons for North Kingston, R. I., went cement-asbestos composition through the general contractor, demand holds well. Releases against orders are brisk. The district foundry is operating on a six-day week schedule and deliveries on most small sizes range up to two weeks. Prices are firm. Springfield, Mass., has bids on annual requirements, involving a substantial tonnage. Haverhill, Mass., placed 250 tons, 6, 8 and 12-inch, and 250 tons, 4-inch, has been ordered for Lincoln, Mass. Steel pipe orders to distributors have picked up slightly. Prices are shaded slightly in some districts by secondary sellers, but mill prices hold firm.

New York—Miscellaneous demand for merchant pipe has improved recently, although devoid of outstanding orders. Resale prices continue weak. Cast pipe volume is off, a seasonal development, with most of the major projects scheduled for laying this season already placed. The bulk of current business appears to be in specialties.

Birmingham, Ala.—Pipe production is holding up well. Plants report gratifying tonnage from miscellaneous sources, sufficient to hold production at the five and six day week inaugurated two months ago.

Seattle—Largest project peding is at McChord Field, Wash., involving 550 tons, bids Aug. 4. District 58, Seattle, has awarded transite pipe to Pacific Water Works Supply Co., Seattle, offers for about 200 tons of cast pipe being lower.

San Francisco—Little of interest has transpired in the pipe market during the past two weeks, awards being in lots of less than 100 tons. So far this year 16,922 tons have been booked as compared with 18,029 tons for the corresponding period in 1938.

Cast Pipe Placed

247 tons, 6 to 12-inch, Santa Monica, Calif., to American Cast Iron Pipe Co., Birmingham, Ala.

185 tons, 6-inch, Spokane, Wash., to United States Pipe & Foundry Co., Burlington, N. J.

Cast Pipe Pending

550 tons for McChord Field, Wash.; bids to U. S. army construction quartermaster, Fort Lewis, Wash., Aug. 4.

Wire

Wire Prices, Page 69

Cleveland—A revised card of extras covering standard wire nails, to become effective Aug. 1, has been announced by American Steel & Wire Co. The change is intended to reflect current manufacturing practices and will result in reductions for some sizes and advances for others. A number of sizes, constituting a large part of total tonnage in this product, will be unchanged. The new card provides extras for both fence and netting staples which will henceforth be sold on the base price for nails subject to these extras. This is the first change in nail extras since 1927.

Pittsburgh — Miscellaneous manufacturing consumers account for most wire business. Automotive releases are light, but demand elsewhere is fairly satisfactory.

Chicago—Business compares favorably with that a month ago, and the summer to date has been better than usual in resisting the letdown common to June and July. At the same time, consumer stocks are only moderate. Hardware and building interests have been ordering well, the same being true of bed spring and kitchen utensil manufacturers.

Boston—While buying of wire specialties is spotty, the aggregate is about maintained, with a slight gain in demand for manufacturers' wire. Tonnage of the latter is well ahead of last year. Some releases are coming from the automobile trade, including light spring material, but such specifications are small. Finishing mill operations are spotty, with prompt delivery asked on most orders. Wire rods move slowly. Except for building wires, and to a lesser degree some flat wire goods, prices are steady.

New York—Coming revisions in nail extras may stimulate demand for certain sizes. Business in wire and its products is back to the late-June volume. Spring wire is moving well to the furniture trade, and a further gain in wire volume will accompany the start of 1940 model auto production.

Birmingham, Ala. — Virtually all sizes and specifications of wire products remain in consistent demand. Most business is for prompt delivery. Manufacturers' wire seems to lead.

Rails, Cars

Track Material Prices, Page 69

Seaboard Air Line has awarded two seven-car streamlined trains, 14 light-weight coaches, to Edward G. Budd Mfg. Co., Philadelphia, and two diesel-electric locomotives to Electro-Motive Corp., La Grange, Ill. Atlantic Coast line has also placed two diesel-electric engines with the same builder.

New York board of transportation

will open bids Aug. 22 for 150 to 300 subway cars.

Erie has divided 3777 tons of rail between two producers, supplementing a purchase of 15,167 tons in April.

Locomotives Placed

Atlantic Coast Line, two 2000-horsepower diesel electric engines, to Electro-Motive Corp., LaGrange, Ill.

Seaboard Air Line, two diesel-electric, to Electro-Motive Corp., La Grange, Ill.

Car Orders Placed

Seaboard Air Line, 14 coaches for two streamlined light-weight trains, to Edward G. Budd Mfg. Co., Philadelphia.

Rail Orders Placed

Erie, 3777 tons; 3007 tons to Carnegie-Illinois Steel Corp., 770 tons to Bethlehem Steel Co.

Car Orders Pending

Board of transportation, New York, 150 to 300 subway cars, to be advertised July 25, with bids closing Aug. 22.

Buses Booked

American Car & Foundry Motors Co., New York: Fifteen 33-passenger and six 35-passenger for Santa Fe Transportation Co., Wichita, Kans.; twelve 35-passenger for Aronimink Transportation Co., Llanercy, Pa.; five 37-passenger and five 35-passenger for Santa Fe Train Transportation Co., Wichita, Kans.; nine 43-passenger for North Boulevard Transportation Co., North Bergen, N. J.; five 28-passenger for Biddeford & Saco Railroad Co., Biddeford, Me.; five 37-passenger for Boston & Maine Transportation Co., East Cambridge, Mass.; three 36-passenger for Gray Line Inc., Boston; five 31-passenger for Wyoming Valley Autobus Co., Wilkes-Barre, Pa.; two 42-passenger for Boston, Worcester & New York Street Railway Co., Framingham, Mass.

Twin Coach Co., Kent, O.: Twenty-nine 40-passenger for North Shore Bus Co., Bronx, N. Y.; fifteen 40-passenger for Surface Transportation Corp., Bronx, N. Y.; fourteen 37-passenger for Railway Equipment & Realty Co., Oakland, Calif.; six 21-passenger for Duluth-Superior Transit Co., Duluth; three 35-passenger for Valley Motor Transit Co., East Liverpool, O.

Tin Plate

Tin Plate Prices, Page 68

Tin plate production is up 5 points to 65 per cent. It is thought doubtful if the late-June rate of 70 per cent will be regained this season. Specifications are beginning to taper seasonally, but domestic volume still is good and export business is generally satisfactory. In fact, this country is a little behind in meeting its international quota. Germany is substantially behind on its orders, and England is comfortably ahead.

Shapes

Structural Shape Prices, Page 68

Pittsburgh—Private inquiries and awards are more numerous. Awards recently have been almost entirely on private jobs, the largest being a Washington office building, requiring 4200 tons, awarded to Fort Pitt Bridge Works, Pittsburgh.

Cleveland — Public projects continue to lead and little early improvement is anticipated from private sources. Fabricators are fairly busy, however, and shipments are running ahead of new business. Largest recent award went to Fort Pitt Bridge Works, Pittsburgh, 1950 tons for the Cedar street bridge, Youngstown, through Hunter Construction Co., Youngstown. Prices are unsteady.

Boston—Awards are few and mostly small. Pending bridge needs are also off, being under 500 tons. Public work has gradually declined to a dribble, although the Charlestown (Boston) housing project will take close to 2000 tons. Plain structural material is firmer, although

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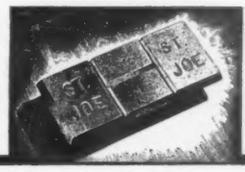

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district fabricating shops, with light backlogs as a rule, are buying little beyond tonnage to meet currently reduced needs.

Chicago—Structural inquiries are lighter, but awards total over 4000 tons. Pending work includes 800 tons for carrying the Northwestern railroad and the North Shore railway tracks at Winnetka, Ill. Inquiries are lighter, although there is still considerable activity.

New York—A tunnel under the East river, from lower Manhattan to Brooklyn, now appears likely, as a result of the War department's flat refusal to sanction the proposed 100,000-ton bridge from the Battery to Brooklyn. The War department, it is said, will co-operate with the city on plans for a tunnel. This project will consume much less tonnage than required by the bridge. Local structural awards are scattered.

Philadelphia — Some fabricators have comfortable backlogs, but judging from a recent flurry of weakness in fabricated material prices, this is not generally true. Most new awards and inquiries are small.

Buffalo—Fresh vigor is shown in the structural market with contracts pending on several state highway bridges. Aggregate tonnage for seven, on which bids were being opened last week, is approximately 1300 tons.

Seattle—Inquiry is slow and no important projects are up for bids. Pacific Car & Foundry Co. will fabricate 550 tons for a state bridge in Snohomish county, Washington.

San Francisco—Of special interest was the opening of bids on close to 6000 tons of shapes for drum gates for the Grand Coulee dam in Washington, on which American Bridge Co. submitted the low bid of $609,360. Bids have just been taken on 700 tons for two 350-ton overhead traveling cranes for the Grand Coulee dam under specification 851. Awards aggregated 1190 tons, bringing the year's total to 71,083 tons, compared with 69,425 tons in 1938.

Shape Awards Compared

	Tons
Week ended July 22	**27,937**
Week ended July 15	**22,858**
Week ended July 8	**21,143**
This week, 1938	**16,648**
Weekly average, year, 1938	**21,568**
Weekly average, 1939	**22,570**
Weekly average, June	**17,590**
Total to date, 1938	**473,874**
Total to date, 1939	**654,517**

Includes awards of 100 tons or more.

Shape Contracts Placed

4200 tons, office building, Washington, for Lafayette Corp., to Fort Pitt Bridge Works, Pittsburgh.

2000 tons, additions, Tulane University stadium, New Orleans, to Virginia Bridge Co., Birmingham, Ala.

1950 tons, Cedar street bridge, Youngstown, O., to Fort Pitt Bridge Works, Pittsburgh; through Hunter Construction Co., Youngstown.

1485 tons, Ballard bridge, Seattle, to Bethlehem Steel Co., Bethlehem, Pa.; through Isaacson Iron Works, Seattle.

1330 tons, Columbus road bridge, Cleveland, to Wisconsin Bridge Co., Milwaukee.

1300 tons, air line terminal, Pershing Square, New York city, to Lehigh Structural Steel Co., Allentown, Pa.; through Bethlehem Engineering Co., New York.

850 tons, bureau of reclamation spec. 1236D, state of Washington, to American Bridge Co., Pittsburgh.

810 tons, bridge ERP-9, Lampasas and San Saba counties, Texas, divided equally between Virginia Bridge Co., Roanoke, Va., and North Texas Iron & Steel Co., Fort Worth, Tex.

800 tons, Colorado river bridge, San Saba, Tex.; 500 tons to Virginia Bridge Co., Roanoke, Va.; 300 tons to North Texas Iron & Steel Co., Fort Worth, Tex.

800 tons, armory, Kedzie and North avenues, Chicago, to Bethlehem Steel Co., Bethlehem, Pa.

670 tons, bridge section 8BI, Somerset county, Pennsylvania, to Fort Pitt Bridge Works, Pittsburgh.

560 tons, addition public school number 67, Brooklyn, to Lehigh Structural Steel Co., Allentown, Pa.

550 tons, Snohomish river bridge, Washington state, to Pacific Car & Foundry Co., Seattle; Manson Construction Co., Seattle, general contractor.

540 tons, highway bridge, Cordova, Iowa, to Pittsburgh Des Moines Steel Co., Pittsburgh.

538 tons, viaduct, Cloquet, Minn., to

535 tons, state normal school addition, Brockport, N. Y., to F. L. Heughes & Co., Rochester, N. Y.

525 tons, federal building, Washington, to American Bridge Co., Pittsburgh; through McCloskey & Co., Philadelphia.

510 tons, Indiana farm bureau fertilizer building, Indianapolis, to Pittsburgh Bridge & Iron Works, Rochester, Pa.

510 tons, bridge FAGS-93-A, Bexar county, Texas, divided equally between Alamo Iron Works, San Antonio, Tex., and Austin Bros., Dallas, Tex.

500 tons, crane runway, New York Shipbuilding Corp., Camden, N. J., to Lehigh Structural Steel Co., Allentown, Pa.

432 tons, Howell school, Cleveland, to Whitehead & Kales Co., Detroit; through De Hamel Construction Co., Cleveland.

375 tons, New York state highway bridge FAS SS-392, Schenectady county, to Lackawanna Steel Construction Corp., Buffalo.

375 tons, buildings, Quincy, Mass., for Procter & Gamble Co., to New England Structural Co., Everett, Mass.

360 tons, Rock Island lines, Minneapolis, to Minneapolis-Moline Power Implement Co., Minneapolis.

360 tons, Western Maryland bridge over Elizabeth street, Hagerstown, Md., for state of Maryland to American Bridge Co., Pittsburgh.

300 tons, piling, dock, Kelly Island Lime & Transport Co., Marblehead, O., to Bethlehem Steel Co., Bethlehem, Pa.

290 tons, building, A. W. Soley Mfg. Co., Decatur, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

270 tons, roasting building, Palmerton, Pa., for New Jersey Zinc Co., to Bethlehem Fabricators Inc., New York.

270 tons, government project, Washington, to Morris Wheeler & Co., Philadelphia; through McCloskey & Co., Philadelphia.

260 tons, junior high school, San Francisco, to Herrick Iron Works, Oakland, Calif.

235 tons, Seneca street state bridge FAGM-C-39-5, Oswego, N. Y., to American Bridge Co., Pittsburgh.

235 tons, fertilizer plant Farm Bureau Cooperative association, Cincinnati, to Pittsburgh Bridge & Iron Works, Rochester, Pa.

230 tons, office building, G. & C. Merriam Co., Springfield, Mass., to Haarmann Steel Co., Holyoke, Mass.

210 tons, several bridges, Chicago, Milwaukee, St. Paul & Pacific, Minneapolis, Minn., to American Bridge Co., Pittsburgh.

210 tons, tunnel supports, relocation Southern Pacific tracks, Central Valley project, Calif., specification 839, to unnamed interest.

210 tons, housing project, Champion avenue, Columbus, O., to C. E. Morris Co., Columbus, O.

200 tons, shore parkway contract SS-39-6, Brooklyn, to American Bridge Co., Pittsburgh.

195 tons, including 38 tons of sheet piling, specification 843, Grand Coulee dam, Washington, to unnamed interest.

185 tons, Sunbeam enamel building, Evansville, Ind., to International Steel Co., Evansville.

170 tons, garage, Chicago, Ill., for Chicago Tribune Co., to Wendnagel & Co., Chicago.

160 tons, bulk plant, Cincinnati, for Standard Oil Co., to Truscon Steel Co., Youngstown, O.

157 tons, bridge steel and metal work, Leavenworth, Wash., hatchery; Norris Bros., Burlington, Wash., general contractors; materials furnished by reclamation bureau.

155 tons, fertilizer plant, Farm Bureau Cooperative association, Maumee, O., to Pittsburgh Bridge & Iron Works, Rochester, Pa.

150 tons, remodeling post office and courthouse, Yakima, Wash., to unnamed interest.

150 tons, miscellaneous, parcel post building, San Francisco, to Judson-Pacific Co., San Francisco.

145 tons, high school addition, Port Richmond, Staten Island, New York, to Weatherly Steel Co., Weatherly, Pa.

140 tons, grandstand, Rutland, Vt., for Rutland County Agricultural society, to Patch-Wagner Co.

135 tons, bridge 30-89, New York, New Haven & Hartford, Kenyons, R. I., to Bethlehem Steel Co., Bethlehem, Pa.

110 tons, foundry and warehouse, Doehler Die Casting Co., Toledo, O., to Art Iron & Wire Works, Toledo.

100 tons, Newberry store, Framingham, Mass., to Lehigh Structural Steel Co., Allentown, Pa.

100 tons, addition for American Can Co., Vernon, Calif., to Columbia Steel Co.,

San Francisco.

100 tons, 50-ton overhead traveling crane, specification 1231-D, Grand Coulee dam, Wash., to Bedford Foundry & Machine Co., Bedford, Ind.

Shape Contracts Pending

6000 tons, drum gates, specification 854, Grand Coulee dam, Washington; American Bridge Co., Pittsburgh, low at $609,360.

1800 tons, Midwood high school, Brooklyn; bids Aug. 7.

1550 tons, Chicago subway contract D-1, bids July 27; 3000 feet of lining also required.

1000 tons, shore parkway bridge MS-39-3, Brooklyn, N. Y., for city of New York.

1000 tons, Tasker street housing project, Philadelphia; George A. Fuller Co., Philadelphia, low on basic proposal and Turner Construction Co., Philadelphia, low on alternate.

925 tons, bridge, department of parks, Paerdegat Basin, Kings county, New York; bids July 25.

900 tons, Delaware state bridge, near Wilmington, Del.; J. A. Bader Co., Wilmington, low.

900 tons, bridge, Sullivan county, New York, Pike Co., Pa., for state of Pennsylvania.

900 tons, Nethes river bridge, Beaumont, Tex., for Texas & New Orleans railway.

800 tons, several New York state bridges; bids Aug. 9.

800 tons, grade separation, Winnetka, Ill. Suburban Paving & Improvement Co., Chicago, low on combination contract and on two sections of combination; William J. Howard Inc., Chicago, low on third.

700 tons, two 350-ton overhead traveling cranes, specification 851, Grand Coulee dam, Washington; bids opened.

700 tons, Franklin Falls dam, Franklin, N. H., for U. S. engineer office.

700 tons, factory building, for Peter Cailler Kohler Swiss Chocolate Co., Fulton, N. Y.

700 tons, two 350-ton overhead traveling cranes, specification 851; bids postponed from July 10 to 20.

600 tons, highway bridges, Carlisle, Pa., for Pennsylvania turnpike commission.

600 tons, reconstruction water street, cont. 5, Pittsburgh, Pa., for Allegheny county.

550 tons, prison cell block, Green Haven, N. Y., for city of New York.

500 tons, Powell avenue viaduct, Erie county, Pennsylvania, for state of Pennsylvania.

450 tons, state highway bridge, Allegheny county, New York, to be rebid.

420 tons, bridge A-64, Cajon, Calif., for Atchison, Topeka & Santa Fe railroad.

400 tons, bridge RC-4045, Getzville, N. Y., for state of New York.

350 tons, buildings, Perth Amboy, N. J., for American Smelting & Refining Co.

325 tons, school building, Bloomfield, N. J., for St. Thomas church.

296 tons, tunnel supports, relocation Southern Pacific tracks, Kennett division, Central Valley project, Calif., specification 861; bids opened.

250 tons, bridge No. 4585, Avoca, Iowa, for Chicago, Rock Island & Pacific railroad.

250 tons, Chicago subway contract S-6; new bids tentatively set for Aug. 10. About 4700 tons of liner plates and beam ribs also involved.

245 tons, state bridge Lewis county, Washington; Angeles Gravel & Supply Co., Port Angeles, Wash., general contractor.

225 tons, state bridge, north branch Potomac river, Keyser, W. Va.

225 tons, dynamometer building, Highland Park, Mich., for Chrysler Corp.

225 tons, apartment house, Rochester, N. Y., for W. W. Vicinus.

225 tons, continued treatment building No. 15, Kings Park, N. Y., for city of New York.

208 tons, Santa Ana river bridge, San Bernardino county, California; bids July 27.

200 tons, alterations, power house, Chester, Pa., for Philadelphia Electric Co.

200 tons, grain elevator, Chesapeake & Ohio railroad, 102nd street and Calumet river, Chicago; John S. Metcalfe & Co., Chicago, engineers.

180 tons, office building, Rochester, Minn., for Mayo Properties association.

175 tons, Knightville dam, Westfield river, Mass., for U. S. Engineers office.

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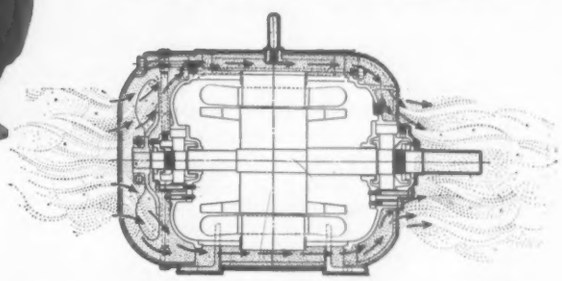

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M39-16

Wagner Electric Corporation

6400 Plymouth Avenue, Saint Louis, U.S.A.

MOTORS TRANSFORMERS FANS BRAKES

160 tons, Major Donnelly homes, Trenton, N. J., for U. S. Housing administration.

150 tons, building, Harrison, N. J., for National Oil Products Co., that city.

150 tons, state bridges RC-4021 RC-4046, Stephentown, N. Y.

150 tons, RC-4050, Bowmansville, N. Y., for state of New York.

125 tons, repairs street, Charles Air Line bridge, Chicago, for Illinois Central railroad.

125 tons, engine house, Pekin, Ill., for Standard Brands Inc., New York.

120 tons, state bridge RC-4049, Fullers, N. Y.

108 tons, Juneau equipment depot, Alaska; bids Aug. 17.

100 tons, store building, R-E Corp., Evanston, Ill.; to be leased by S. S. Kresge Co.

Unstated, fish screen structure, Echo, Oreg.; Wm. M. Schmitt, Portland, low.

Unstated, 94-foot incinerator bridge; bids in at Portland, Oreg., July 22.

Unstated tonnage, 20 story apartment, Fifty-Ninth and Broadway; plans expected to be issued by Charles Mayer, 31 Union Square, engineer.

Reinforcing

Reinforcing Bar Prices, Page 69

Pittsburgh—The definition of concrete reinforcing bars has been changed to deformed bars only, instead of plain or deformed bars. Hereafter no plain bars will be sold as reinforcing material; instead, they will take the merchant bar base. An exception is made in the case of previous commitments, which will be continued to Oct. 1. Interest in the concrete bar market has been aroused by marked increase in private construction inquiries and awards recently. Producers are hopeful that this condition will hold up the market after the government spending begins to decline.

Cleveland—Volume of private inquiries and awards is small and little improvement is seen. Awards include 310 tons of joists and reinforcing bars for the Central high school here, to Truscon Steel Co., Youngstown, O., through Shirmer Peterson Co., Cleveland. Prices are fair although no real test has been made recently.

Boston—Reinforcing bars buying in small lots holds, but the aggregate tonnage from New England is down. Pending requirements are slightly higher, although most reinforcing, including piling, for the Hartford-Springfield flood control active contracts has been bought. Bridge and highway needs are light.

Chicago—Concrete bar demand is steady and a substantial number of small projects have developed. In addition, there are many sizable tonnages still pending final placement. Bids will be taken July 25 on the Ida B. Wells low-cost housing project, Chicago, involving over 2000 tons. Only project larger is Chicago subway section S-3, still pending for 3700 tons. Improvement in concrete bar prices is reported, with concessions said to be less prominent than in recent months.

New York—Several sizable reinforcing bar jobs are up for figures this week, notably Lackawack dam for local board of water supply involving 3000 tons. Bids open July 25 on first 775 tons for bridge for department of parks, Paerdegat basin Kings county and on July 26 for a new Jersey state bridge, Middlesex county, New Jersey, requiring 513 tons. An aggregate of several hundred tons is involved in four municipal authority housing projects, in Northern New Jersey.

Philadelphia—Inquiries are featured by 900 tons for the Tasker Street housing project on which contractors' bids have been taken. Should alternate plans be adopted the work also will involve 200 tons of joists.

Seattle—Several substantial projects are pending. Awards include 100 tons to Seattle Steel Co. for a state bridge in Snohomish county, Washington, and 150 tons for Bonneville power line footings to unnamed interest.

San Francisco—Awards are few, aggregating only 980 tons. This brought the year's total to 89,451 tons, compared with 61,626 tons in 1938. James W. Glover, Honolulu, submitted the low bid on general contract for 500 tons for a housing project that city. Bids are in on 405 tons for the power plant drop No. 3 for the Imperial irrigation district, El Centro, Calif.

Reinforcing Steel Awards

1000 tons, Panama canal, schedule No. 3492, to Bethlehem Steel Co., Bethlehem, Pa.

650 tons, Bedford housing, Pittsburgh, Pa., to Bethlehem Steel Co., Bethlehem, Pa.

625 tons, municipal warehouses, Richmond, Va., to Virginia Bridge Co., Birmingham, Ala.

600 tons, grain elevator, Chesapeake & Ohio railroad, 102nd street and Calumet river, Chicago, John S. Metcalfe & Co., Chicago, engineers; 400 tons to Inland Steel Co., Chicago; 200 tons to Truscon Steel Co., Youngstown.

584 tons, Outer Mission high school, San Francisco, to Bethlehem Steel Co., San Francisco.

500 tons, bridge, Western avenue and drainage canal, Chicago, to Olney J. Dean Steel Co., Chicago; through Michael J. McDermott & Co., Chicago.

300 tons, joists and bars, Central high school, Cleveland, to Truscon Steel Co., Youngstown, O.; through Shirmer Peterson Co., Cleveland.

300 tons, buildings for Permante Cement Co., Santa Clara county, California, to San Jose Steel Co., San Jose, Calif.

272 tons, Holly Circle housing project, San Francisco, to Simonds Co., San Francisco.

270 tons, civic center, Great Falls, Mont., to Paper-Calmenson Co., St. Paul, Minn.

250 tons, southern parkway, S-39-2, New York, to Concrete Steel Co., New York.

242 tons, gymnasium, junior high school, San Francisco, to Ceco Steel Products Corp., San Francisco.

225 tons, river front boulevard No. 3, Pittsburgh, John F. Casey Co., contractor to Lind Co., Pittsburgh.

200 tons, William Howard Taft school, New York, to Carroll-McCreary Co. Inc., New York.

200 tons, college of engineering building, University of Southern California, Los Angeles, to unnamed interest.

158 tons, underpass on Golden Gate bridge approach, San Francisco, to Truscon Steel Co., San Francisco.

155 tons, state hospital building, Talmadge, Calif., to Bethlehem Steel Co., San Francisco.

150 tons, footings for Bonneville transmission towers, to unnamed supplier; Fritz Ziebarth, Long Beach, Cal., general contractor.

115 tons, shore parkway, MS-39-14A, Brooklyn, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

113 tons, joists and bars, Kentucky school, Cleveland, to Truscon Steel Co., Youngstown, O.; through Carbone Construction Co., Cleveland.

110 tons, Joint highway district, San Mateo county, California, to Truscon Steel Co., San Francisco.

110 tons, sewage treatment plant, Cortland, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

100 tons, over-crossing, Adams county, Idaho, to unnamed interest.

100 tons, jail, superstructure, Washington, to Bethlehem Steel Co., Bethlehem, Pa.

100 tons, Washington state bridge, Snohomish county, to Seattle Steel Co.; Manson Construction Co., Seattle, general contractor.

100 tons or more, state bridge Josephine county, Oregon, to unstated Portland firm; Birkemeier & Saramel, Portland, general contractor.

Concrete Bars Compared

	Tons
Week ended July 22	**7,529**
Week ended July 15	**6,473**
Week ended July 8	**6,828**
This week, 1938	**12,278**
Weekly average, year, 1938	**6,959**
Weekly average, 1939	**9,872**
Weekly average, June	**10,667**
Total to date, 1938	**164,683**
Total to date, 1939	**286,299**

Includes awards of 100 tons or more.

Reinforcing Steel Pending

3700 tons, Chicago subway contract S-6. New bids will be advertised for, with closing tentatively set for August 10. John Griffith & Son Co., Chicago, low on original bid.

3000 tons, Lackawack dam, New York board of water supply; bids July 25.

2650 tons, Chicago subway contract D-1;

bids July 27.

2000 tons, line pipe, Harrisburg, Pa.; to Lock Joint Pipe Co., Ampere, N. J., also require 3000 tons of sheets.

1500 tons, building addition, Montgomery Ward & Co., Chicago.

900 tons, Tasker street housing project, Philadelphia; George A. Fuller Co. low on basic contract, Turner Construction Co. low on alternate.

900 tons, additional for plant for Permante Cement Co., Santa Clara county, California; Rust Engineering Co., Pittsburgh, low on general contract.

775 tons, bridge, department of parks, Paerdegat Basin, Kings county, New York; bids July 25.

554 tons, Pennsylvania turnpike, Bedford county, sec. 13 E.; bids in.

515 tons, state bridge work, route 35, section 14, New Jersey, bids to state highway commission, July 28.; another item involving more than 50 tons of reinforcing bars and about 85 tons of shapes is for a bridge, route 51, section 1, bids Aug. 4, with bids on road work involving 10,780 square yards of reinforced concrete pavement.

500 tons, housing project, Honolulu, T. H.; James W. Glove, Honolulu, low on general contract.

450 tons, Pillsbury Flour Mills Co. building, Buffalo, N. Y.

450 tons, sewage plant, Rock Island, Ill.

405 tons, power plant drop No. 3, specification 11-B, imperial irrigation district, El Centro, Calif.; bids opened.

400 tons, Roza irrigation project; bids in to bureau of reclamation at Yakima, Wash.

350 tons, grade separation, contract No. 8, Winnetka, Ill.

300 tons, Central Illinois Public Service Co., East Peoria, Ill.

295 tons, gun battalion barracks, invitation 69-39-28, Hickam Field, T. H; general contract to Robert E. McKee, 4700 San Fernando Road, Los Angeles.

270 tons, Leavenworth, Wash., fish hatchery project; Norris Bros., Burlington, Wash., general contractors; materials supplied by reclamation bureau.

268 tons, Boise project; bids in to bureau of reclamation at Boise, Idaho.

256 tons, coast guard air station, San Francisco; general contract to Wm. Wills, Box 81, Presidio, San Francisco at $508,600.

205 tons, bridge, Ventura county, California; bids July 27.

200 tons, bridge in Lassen county, California; bids July 26.

200 tons, Gambo creek bridge, spec. 9129, Dalhgren, Va.

108 tons, equipment depot for bureau of roads; bids to M. D. Williams, district engineer, Juneau, Alaska, Aug. 17.

103 tons, Horace Mann junior high school, San Francisco; Alfred Fisher, 111 Sutter Street, San Francisco, low on general contract.

Pig Iron

Pig Iron Prices, Page 70

Toronto, Ont.—Sales are slow, confined to spot needs. A minor decrease in the melt is reported in some areas, largely seasonal, but other sections report better operations. Average foundry schedules hold around 60 per cent.

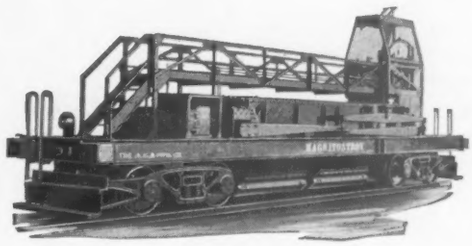
New York—Slight changes in pig iron demand are for the better, although business is spotty. All but some of the largest users have light stocks. The export outlook is a trifle more encouraging. Inquiries are more numerous, and prices offered are at least 50 cents a ton higher but still well below levels that interest sellers.

Buffalo—Releases are spotty, but business is near the June level and pig iron production is maintained at 57 per cent. Heating equipment manufacturers are the principal consumers, with melters generally averaging three days a week. Railroad specifications for malleable castings are slow.

Cleveland—Shipments so far this month are moderately below the June rate, and a small drop is indicated for July as a whole. A large part of the reduction will result from the lag early in the month, when a number of foundries were down, since the melt meanwhile has recovered.

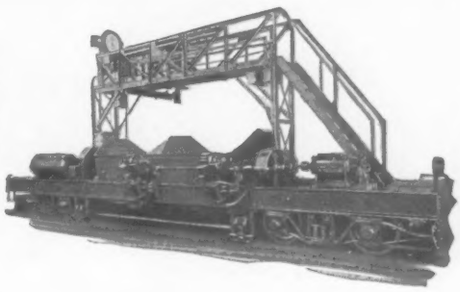
Philadelphia—Specifications are comparable with the June rate. Prices show a firmer tone in that

ATLAS SCALE CARS



20 Ton — Double Compartment Scale Car. Journals provided with self aligning anti-friction bearings. Equipped with Atlas Indicator and Recorder.

20 Ton Two Compartment Scale Car with Orr Bin Gate Operating Mechanism. Anti-friction bearings. Equipped with Atlas Indicating and Recording Mechanism.



Other Atlas Products

Gas-Electric and Diesel-Electric Locomotives—Car Pushers—Storage Battery Locomotives—Electrically Operated Industrial Cars—Scale Cars and Weighing Cars of all kinds — Ore Transfer Cars and Blast Furnace Charging Cars.

Coke Oven Equipment

Pushers and Levellers—Coal Charging Cars—Door Handling Machines — Coke Quenching Cars.

Also Atlas Patented Indicating and Recording Mechanism for Weighing Scales.

THE ATLAS CAR & MFG. CO.

Engineers . . . Manufacturers

CLEVELAND, OHIO

Behind the Scenes with STEEL

Executive Round Table

■ STEEL's Forum on Re-Employment, first opened in the December 12, 1938 issue with a fine contribution by Mr. Wendell Whipp of Monarch Machine Tool Co., has, without a doubt, expressed more sound thinking on the part of industry's leaders than anything else that has appeared in the business paper or general magazine press. If you have missed sitting in on any of these forums, check back in your file and catch up on this required reading. Copies of most every issue are still available if they've been misplaced. And above all, don't miss what Mr. August H. Tuechter, president, Cincinnati Bickford Tool Co., says this week beginning on page 38. Here is a gentleman who knows whereof he speaks.

Montana Message

■ From Billings, Mont., comes a combination jeer and cheer from Bob Webb of Keystone Steel & Wire. Although he assures us he is quite an admirer of this little space and also that he certainly gets his four bucks worth every week when STEEL shows up in the mail, he does have a slight chip on his shoulder for our failing to run up the red flag celebrating Keystone's 50th year of strife and struggle. To faithful Reader Webb, who covers such fascinating towns as Tallgrass and Faranuf, Mont., we suggest a peek at page 32 of the June 26 issue where Keystone's half-century mark was duly and officially noted.

On Reading Magazines

■ In *Life* a week or so ago a letter to the editor gave us some real inside dope on why people read various magazines. From a little survey of his own the writer found that one friend subscribed to a certain periodical only in cold weather as it was very useful to start a fire in the furnace. Another said he subscribed to another magazine because it always had two or three hot stories where the redheaded heroine got her man (either by the marriage-license route or a pearl-handled Smith and Wesson). Another expression of real reader interest was a gent who took a certain magazine published somewhere in Pennsylvania because the editorials always put him to sleep, especially when read at night. All of which seems to prove there are all sorts of people and all sorts of magazines. We can't help but think that few tired executives use STEEL's editorials to go to Sleepytown and fewer still take the winter issues home to fire the furnace. More typical reason for reading STEEL seems to be what an old subscriber over in New Jersey wrote last week: *May I compliment you on the constantly improved job you do each week in keeping me well informed. I particularly like "Mirrors of Motordom" and your new section on "Aviation."*

Coughin' Nails

■ Apparently we don't realize our own strength (or weakness). In looking over the statistics on cigarette sales for the first six months we just realized what a tremendous effect our swearing off for three weeks in February had. Sales for that month had an unaccountable drop of almost two billion under January. We promise never to do it again Mr. Reynolds!

We'll Marry The Gal

■ "Don't Shoot Mr.", by Vanadium Corp. of America on page 47, is our idea of a stopper.

Worth Reading

■ For the most complete story of the contributions of technology to American civilization that we have yet seen, drop a line to the Machinery & Allied Products institute, 221 N. LaSalle St., Chicago and ask for a copy of their most recent pamphlet. It really tells a tale.

SHRDLU

some sellers who permitted additions to old low-price contracts are abandoning this practice and are making attempts to complete all of such contracts by Oct. 1.

St. Louis—Deliveries hold near the June rate. Buying is moderately heavier, orders coming principally from smaller foundries. The melt is well sustained and expected to increase shortly on heavier schedules of stove and heating equipment plants.

Cincinnati—Shipments are back to the June rate, with new buying in small lots. Hamilton Coke & Iron division of American Rolling Mill Co. plans to cool its No. 1 furnace this week for relining. This will accompany idleness of open-hearths at Middletown, where a new blooming mill is being installed.

Boston—Shipments are steady, but small individually, and new buying is light. Foundry melt is about maintained. Some unfilled tonnage was carried over from last quarter.

Scrap

Scrap Prices, Page 72

Pittsburgh — Prices continue strong. Open-hearth grades, particularly No. 1 steel, are quiet, but low phosphorus is active. One mill, holding up shipments for some time, has given releases, and another steelworks has boosted receipts against recent heavy purchases, mostly No. 2 steel.

Cleveland—A potentially strong market exists but without buying quotations are generally unchanged. There is no activity except between dealers, to fill contracts.

Chicago—Prices are stronger here in the face of heavier consumption. No. 1 heavy melting steel is up 50 cents to $13.50 to $14, following mill purchases within this range. Brokers are paying $13.50 or more for this grade. Quotations also are higher on several other grades.

Boston—Steel scrap prices for export are firmer, more tonnage moving at the top of the range. Activity is confined mostly to export, with ship loading heavy. More grades are being bought against the last export order.

New York—Buying is quiet. Prices are unchanged except for a firmer quotation on stove plate for export. This grade now holds at $9.50, docks. Movement of export scrap generally is slower, although better demand from the Orient is expected shortly.

Philadelphia—No. 1 heavy melting steel is higher at $15.50 to $16, against a flat $15.50 previously. Small sales have been made at the top figure. Cast grades are stronger,

with heavy breakable $15 to $15.50, and old compressed sheets are up 50 cents.

Buffalo—Strength is accumulating in prices, with advances of 50 to 75 cents on borings, cast grades and specialties. No. 1 steel previously had been marked up 50 cents to $14 to $14.50.

Detroit—Practically all grades are up 25 to 50 cents, but the increase means little in view of scant supplies available from auto plants, most of which are down for model changes. The outlook is improved, based on prospects for heavier buying of automotive steel soon.

Cincinnati—Dealers are more optimistic, and prices on heavier scrap grades are up 25 cents. Higher quotations in other districts tend to offset the lag in steelmaking here.

St. Louis—Little buying is looked for until August, mills generally being well covered by scrap on yards or under contract. Foundry demand is light despite small stocks. Offerings are small, an important factor in sustaining prices.

Birmingham, Ala.—Scrap shows no indications of revival despite accentuated schedules in both blast and open-hearth furnaces.

Seattle—Orders from Japan continue in small lots but with increased steadiness. Tidewater stocks are not large and export prices remain firm at $12.50 and $13.50, rolling mills buying in fair volume at $1 under these figures.

San Francisco—Domestic mills are not interested in competing with export prices which range as high as $15.00 f.a.s. for No. 1 steel. Mills in the Los Angeles and San Francisco districts are paying $13.00 delivered for No. 1 and $12.00 for No. 2. Compressed steel holds around $11.00. During the first five months of the year, approximately 200,000 tons was exported from Pacific coast ports, close to 190,000 tons being for Japan. If the ratio continues for the balance of the year close to 500,000 tons will be exported or about half of the total tonnage produced on the Pacific coast.

Warehouse

Warehouse Prices, Page 71

Chicago—The usual mid-month upturn in business has appeared, and despite the lag the first week, July should compare favorably with June.

Cleveland—Sales are better maintained in number of orders than in size. Considering the season, activity is fairly good, and July is expected to show little change from June.

Boston—Volume so far this month is off slightly but better than expected in view of the satisfactory June. Prices are fairly steady, including nails, although scattered shading on sheets and steel pipe in some districts is evident.

New York—Sales are holding up fairly well. Demand for some products has declined, notably black and galvanized sheets, but some warehouses report little change in general since June. Prices are reasonably steady, although there is continued sniping, aided by low quotations on foreign steel.

St. Louis—Business has expanded slowly but steadily since the holiday. Railroad orders are better, and increased demand from rural districts reflects need for repair material in connection with harvests.

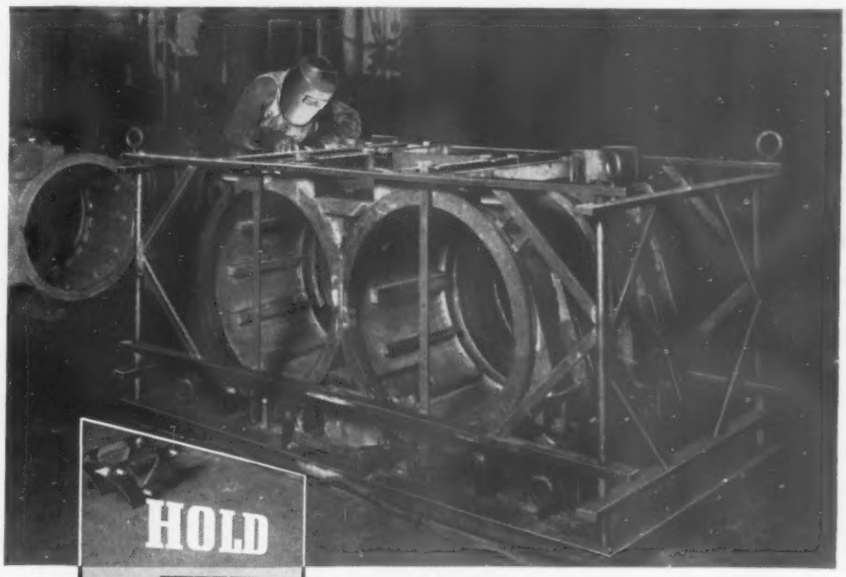
Philadelphia—Warehouses are fairly well satisfied with business, the change from June lacking the decrease common to the period.

Buffalo—A better tone prevails, with sales about equal to the June rate. Structurals, bars and occasionally plates are moving better.

Cincinnati—Sales are successfully resisting a summer lull, comparing favorably with June. Sheets are less active and building products are in light demand.

Detroit—Demand is steady despite retarding effect of the tool and die makers' strike. Tooling work on new models will be completed soon, but other outlets are expected to take up the slack.

Seattle—Volume of business reflects mid-season dullness, turnover being less than last month. Light plates and sheets continue to lead. Sales are in small lots but prospects for early fall movement are more promising.



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Steel in Europe

Foreign Steel Prices, Page 71

London — (*By Cable*) — Steel and iron imports into Great Britain in June totaled 199,933 gross tons, an increase of 57,321 tons over 142,612 tons imported in May. This is partly due to heavy receipts of semifinished steel from the Continent, rerollers being heavy importers. Exports in June were 162,289 tons, 6224 tons less than in May.

Armament needs assure work for many months especially in structurals and sheets. Improvement in demand for hematite foundry iron is being maintained and basic iron production is being fully absorbed by the steel industry. Steel scrap is scarce.

The Continent reports export business increasing in semifinished steel but domestic markets are slow, due to political fears. Prices are firm.

Nonferrous Metals

New York — Contra-seasonal increase in sales and shipments of nonferrous metals this month has strengthened confidence that business will improve markedly over the remainder of the year. Operations at fabricating plants have rebounded well from the lows reached earlier in the month.

Copper—Sales declined prior to the price rise late Friday due to the well-covered position of consumers. Fair business was transacted in the export market which also held at around 10.25c, c.i.f. Heavy July and August shipments are expected to reduce producers' stocks sharply.

Kennecott Copper Corp. late Friday initiated an advance of ⅛-cent to 10.37½c, Connecticut, on electrolytic.

Lead—Demand was heavier than had been expected and continued as the most consistently active of all the markets. Prices have held firm since June 19 at 4.70c, East St. Louis.

Zinc—Rise in the galvanized sheet output rate to 54 per cent of capacity coupled with an advance in London prices to a new high for the year tended to strengthen the domestic 4.50-cent price level for prime western.

Tin—The buffer pool's corner on spot supplies kept standard spot fixed at £229 17s 6d throughout the week. Sales were generally light here with prices ranging from 48.50c to 48.60c on Straits spot.

Nonferrous Metal Prices

Spot unless otherwise specified. Cents per pound.

July	Copper Electro, del. Conn.	Copper Lake, del. Midwest	Copper Casting, refinery	Straits Tin, New York Spot	Straits Tin, New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Amer. Spot, N.Y.	Nickel Cathodes
15	10.25	10.25	9.87½	48.60	48.30	4.85	4.70	4.50	20.00	12.00	35.00
17	10.25	10.25	9.87½	48.55	48.30	4.85	4.70	4.50	20.00	12.00	35.00
18	10.25	10.25	9.87½	48.60	48.35	4.85	4.70	4.50	20.00	12.00	35.00
19	10.25	10.25	9.87½	48.50	48.27½	4.85	4.70	4.50	20.00	12.00	35.00
20	10.25	10.25	9.87½	48.50	48.25	4.85	4.70	4.50	20.00	12.00	35.00
21	10.25	10.25	9.87½	48.50	48.25	4.85	4.70	4.50	20.00	12.00	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb., except as specified. Copper brass products based on 10.25c Conn. copper

Sheets

Yellow brass (high) 16.65
Copper, hot rolled 18.37
Lead, cut to jobbers 8.00
Zinc, 100 lb. base 9.75

Tubes

High yellow brass 19.40
Seamless copper 18.87

Rods

High yellow brass 12.00
Copper, hot rolled 14.87

Anodes

Copper, untrimmed 15.62

Wire

Yellow brass (high) 16.90

OLD METALS

Nom. Del. Buying Prices

No. 1 Composition Red Brass

New York 5.87½-6.12½
Cleveland 6.75-7.00
Chicago 6.25-6.50
St. Louis 6.25-6.50

Heavy Copper and Wire

New York, No. 1 .....7.87½-8.00
Cleveland, No. 1 .....7.75-8.00
Chicago, No. 1 .....7.62½-7.87½
St. Louis 7.75-8.00

Composition Brass Turnings

New York 5.12½-5.37½

Light Copper

New York 6.37½-6.62½
Cleveland 6.00-6.25
Chicago 6.25-6.50
St. Louis 6.25-6.50

Light Brass

Cleveland 3.75-4.00
Chicago 4.12½-4.37½
St. Louis 3.75-4.00

Lead

New York 4.00-4.25
Cleveland 3.75-4.00
Chicago 3.60-3.85
St. Louis 3.50-3.75

Zinc

New York 2.50-2.62½
Cleveland 2.25-2.50
St. Louis 2.25-2.50

Aluminum

Borings, Cleveland 6.25-6.50
Mixed, cast, Cleveland 7.75-8.00
Clips, soft, Cleveland 14.75-15.00
Misc. cast, St. Louis 7.00-7.25

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads..10.50
Standard No. 12 aluminum....11.75-12.00

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FRANKLIN ST. AT OHIO RIVER — PITTSBURGH, PA.

Iron Ore

Iron Ore Prices, Page 72

New York—A little 1940 buying of chrome ore has appeared, although the contracting season does not get under way until August. Better business than a year ago is expected, since stocks are down substantially. Active European consumption primarily is responsible for

strong prices on foreign ore and for low importations this year.

France is reported to have lifted a brief embargo on Algerian iron ore shipments to Germany and French industries are said to be pressing for a heavier exchange of Lorraine iron ore for German coke. Manganese ore demand in this country is quiet, but prices are steady as a result of good consumption abroad.

Cleveland—Lake Superior iron ore consumed during June totaled 2,829,667 tons, against 2,245,513 tons in May and 1,471,660 in June, 1938. In the first half this year consumption increased 59.1 per cent over the comparable 1938 period. Stocks at lower lake ports and furnaces and total as of July 1 follow:

	Furnaces	Lake Erie docks	Total
July 1	21,609,841	4,251,396	25,861,237
Month ago	18,835,151	4,236,063	23,071,214
Year ago..	29,159,617	5,169,606	34,329,223

Nine additional ore carriers went in service on the Great Lakes between June 15 and July 15, bringing the total to 206 out of 302, or 68.21 per cent, according to monthly statistics of the M. A. Hanna Co. A year ago, 40.91 per cent of all vessels were in commission. Of the 206 boats in service, 180 were engaged in the ore trade, against 92 a year ago.

Equipment

New York—Machine tool builders are reasonably satisfied with demand this month. Some sellers find business comparable with that of the corresponding period of June, although the nature of demand has shifted somewhat. There is not the brisk buying by airplane equipment manufacturers, and shipyard orders are less numerous. Well sustained, on the other hand, is business from government ordnance shops and, interestingly, from stamping shops, which produce household appliances or parts with demand stimulated by brisk activity in housing and residential construction.

Builders of textile machinery show increasing interest and some machine tool sellers here expect it to exert a sustaining influence on demand over the next few weeks.

Construction and Enterprise

Illinois

CHICAGO—Chicago Screw Co. has prepared plans for a two-story addition and other extensions to its plant at cost of approximately $20,000.

CHICAGO—Montgomery Ward & Co. are asking bids on general contract for a four-story machine shop, storage and distribution building, and two-story storage building. Cost is estimated at over $100,000 with equipment. E. H. Hughes, company engineer.

Rhode Island

BRISTOL, R. I.—Collins & Aikman Corp. is taking bids on a four-story, 140 x 147-foot mill. Will install considerable equipment. (Noted June 26.)

New Jersey

RAHWAY, N. J.—Merck & Co. will soon take bids on a 40 x 100-foot chemical laboratory costing $125,000. G. P. Butter, 40 East 49th street, New York, architect.

Pennsylvania

ERIE, PENN.—Victoria Metal Co. Inc., J. Reger, manager, has awarded contract to Bader & Schew, Ariel building, for a one-story, 40 x 100-foot foundry.

Ohio

CINCINNATI—City, J. E. Root, director of public works, proposes to build a sewage disposal plant and interceptor sewers to cost $2,800,000. H. H. Kranz, city engineer.

CLEVELAND—City, division of light and power, George C. Oxer, commissioner, is asking bids until noon, Aug. 11, on substructure for its generating plant at cost of an estimated $550,000. Includes turbine rooms. Consulting engineer, Peter A. Loftus, Oliver building, Pittsburgh. (Noted May 29.)

Indiana

FT. WAYNE, IND.—City, R. G. Beams, member of public works board, takes bids to July 31 on division C of contract No. 14 in sewage system improvement program.

HAMMOND, IND.—Sanitary district, J. E. Haney, chairman, takes bids to July 27 on sewers, interceptors and automatic sewage regulator stations costing an estimated total of $3,000,000.

Florida

MIAMI, FLA.—Growers Cold Storage Corp., N. W. Broadway, manager, Northwest 22nd street, plans to construct additional units to its refrigeration plant at cost of over $500,000.

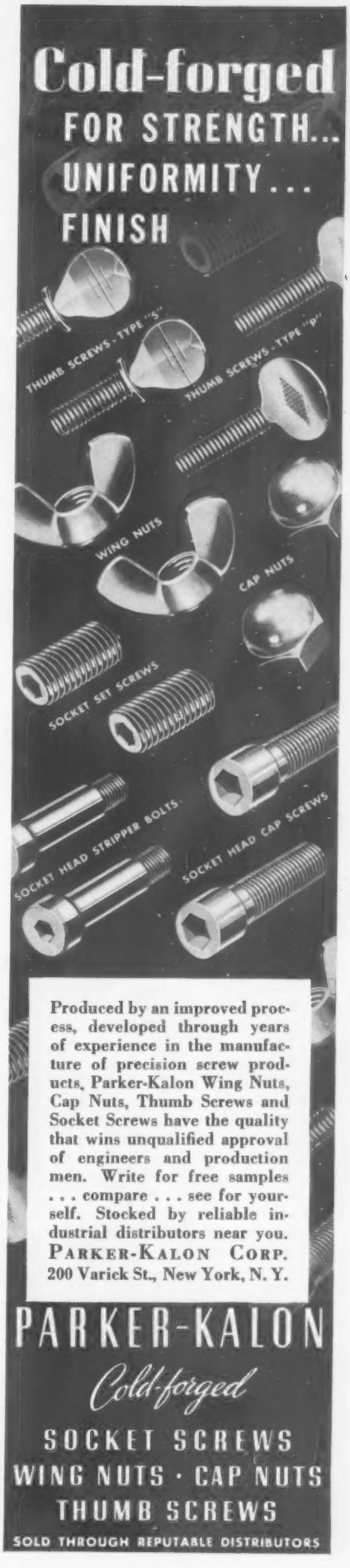
Georgia

JEFFERSON, GA.—Jackson Electric Membership Corp. has REA allotment of $211,000, will build 224 miles of rural electric power transmission lines in four counties.

LUDOWICI, GA.—Town, M. F. Weaver, clerk, receives bids July 28 for construction of a waterworks and distribution system. J. B. McCrary Co., Atlanta, Ga., consulting engineer.

Tennessee

CLEVELAND, TENN.—Cleveland Tennessee Enamel Co. has under construction a one-story, all-steel, 60 x 126-foot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FOR STRENGTH...
UNIFORMITY...
FINISH
THUMB SCREWS - TYPE "S"
THUMB SCREWS - TYPE "P"
WING NUTS
CAP NUTS
SOCKET SET SCREWS
SOCKET HEAD STRIPPER BOLTS
SOCKET HEAD CAP SCREWS
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ADVERTISING PAGES REMOVED

plant addition. Will house an enameling furnace.

MEMPHIS, TENN.—Standard Oil Co. plans to construct storage facilities with capacity for 75,000 barrels of petroleum products. Cost estimated at $56,000.

Louisiana

LAKE CHARLES, LA.—Mathieson Alkali Works, E. M. Allen, president, 60 East 42nd street, New York, proposes to start construction of a plant to manufacture synthetic salt cake used in making paper from southern pine. I. V. Mauer, manager of Lake Charles division.

Missouri

NEVADA, MO.—City, Lynn M. Ewing, mayor, is studying proposal to construct a municipal light plant. William Spann, Interstate building, Kansas City, Mo., consulting engineer.

Arkansas

AUGUSTA, ARK.—City proposes to double capacity of its power plant at cost of $40,000. Will install a 6-cylinder diesel engine and a 500-kilowatt generator.

BLAKELY MOUNT, ARK.—Arkansas Power & Light Co., H. C. Couch, president, Pine Bluff, Mo., soon lets contracts for a hydroelectric project at total estimated cost of upwards of $6,000,000.

Wisconsin

KAUKAUNA, WIS.—City, municipal utilities, is making plans for a $475,000 hydroelectric plant. Mead, Ward & Hunt, Madison, Wis., engineers.

Minnesota

DETROIT LAKES, MINN.—City, E. J. Bestick, clerk, takes bids to 7:30 p.m., Aug. 7, on a two-stage air-cooled compressor with automatic splash lubrication.

TYLER, MINN. — Lyon-Lincoln Electric co-operative, V. Ostergaard, chairman, plans construction of 249 miles of rural electric power transmission lines in two counties, and has filed application with REA for an allotment. H. S. Bliss, Brainerd, Minn., consulting engineer.

Texas

CORPUS CHRISTI, TEX.—Pittsburgh Plate Glass Co., Pittsburgh, has let contract to Pioneer Construction Co., Corpus Christi, for a fireproof warehouse costing $47,916. M. Levy, Corpus Christi, architect and engineer.

FLORESVILLE, TEX.—City has voted to issue $20,000 bonds to complete construction of a sanitary sewerage system and sewage disposal plant costing $50,000.

THREE RIVERS, TEX.—Three Rivers Refining plans to erect at cost of $65,000 a new unit to its oil refinery. H. Coquat, Three Rivers, representative.

Kansas

McPHERSON, KANS. — City, Ellen Lundstrom, clerk, is preparing plans and will soon take bids on a turbine, condenser and low-pressure heater for installation in its power plant. Burns & McDonnell Engineering Co., Kansas City, Mo., consulting engineer. (Noted July 3.)

WICHITA, KANS.—City will seek bids about Sept. 1 on projected improvements to its water supply system to cost about $2,345,000. Black & Veatch, Kansas City, Mo., consulting engineers.

North Dakota

BURLINGTON, N. DAK.—State Water Conservation board has received $29,339 WPA grant to finance projected construction of a dam, canals and pumping facilities.

Nebraska

BLAIR, NEBR.—City council has authorized purchase of a new 875-horsepower diesel power unit costing about $68,000 for installation in the municipal power plant.

Iowa

CLINTON, IOWA—National Candy Co., St. Louis, will soon start construction of a power plant and other improvements at its corn syrup plant. Total cost of project estimated at $900,000.

GOWRIE, IOWA—Village, J.E.T. Johnson, clerk, is considering construction of a water treatment plant.

NEW HAMPTON, IOWA—City is taking bids to Aug. 15 for a turbo-generator, superheaters and other improvements to its power plant to cost more than $100,000. J. W. Wittenburg, city engineer. (Noted July 3.)

Colorado

DENVER—Bureau of reclamation asks bids until Aug. 15 for three 40,000-horsepower hydraulic turbines and governors for installation in Parker power plant. (Specification 867.)

DENVER — Bureau of reclamation takes bids until 2 p.m., Aug. 2, on a 6900-volt, oil-immersed, outdoor-type auto-transformer; two 7500-volt oil circuit breakers; and nine 7500-volt disconnecting switches. Equipment to be installed by government in power substation at Gering, Nebr.

Utah

CASTLE GATE, UTAH.—Utah Fuel Co., Maroni Hiener, president, Judge building, Salt Lake City, Utah, has awarded contract to Link-Belt Co., Chicago, for a coal preparation plant estimated to cost $300,000.

Pacific Coast

SAN FRANCISCO—Federated Metals division of American Smelting & Refining Co. proposes to construct a three-story office building and one-story metal processing plant costing total of $350,000. H. R. MacMichael, 75 Falsom street, consulting engineer.

SAN FRANCISCO—City, S. J. Hester, secretary of public works department, takes bids until July 26 on a sewage treatment plant costing $70,000 at Hassler Health Home.

SEATTLE — Alabama-Nevada Gold Corp., 911 American Bank building, has been incorporated with capital of $100,000 by Almon E. Owens and associates.

SPOKANE—True Oil Co. plans to improve its plant and office building at estimated total cost of $28,500.

Canada

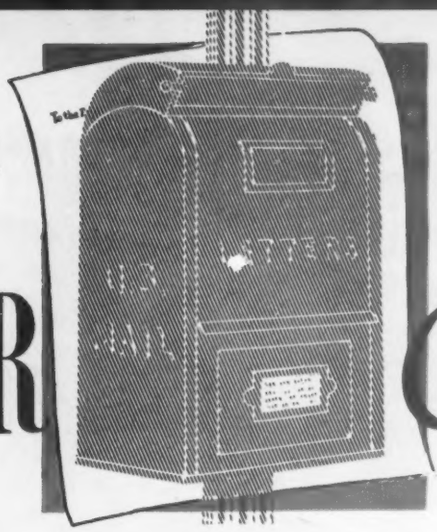
PICTOU, ONT.—Dumont Textiles Ltd. has let contract for rebuilding a one-story, 65 x 110-foot plant unit and building a new boiler shop at total estimated cost of $40,000.

WINDSOR, ONT. — Dominion Auto Moulding Co. Ltd., A. Shaw, manager, plans to build a plant costing approximately $40,000. Will install production equipment.

LENNOXVILLE, QUE.—La Cie des Panceaux Paves de Quebec has plans for a plant costing $50,000 to manufacture metal culverts and road machinery.

SOREL, QUE.—Schneider-Creusot Co. of France is negotiating for a site, has plans to build an ammunition plant costing $200,000. J. Simrad, Marine Industries Ltd., Sorel, is company's representative.

READER Comments



Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

Emphasize Machine Benefit

To the Editor:

I want to compliment you on the editorial, page 34, July 24 issue of STEEL. I agree with you in the stand that we should no longer assume the attitude of defending the machine. All we need do from now on is to talk about the benefit of the machine to our modern standard of living.

W. E. WHIPP

President,
Monarch Machine Tool Co.,
Sidney, O.

Slow vs. Fast Mills

To the Editor:

I was very much interested in R. L. Hartford's article which appeared in the June 12 issue of your magazine.

It is interesting to consider what sort of improvement and development work will be reflected in the steel industry as long as the present profitless condition continues.

The first suggestion that naturally comes up is more or less obvious. Any development which will tend to reduce manufacturing costs or improve the quality of the product, will justify a considerable expenditure of money regardless of the profit and loss statement of the steel industry. In fact, the greater the danger of any steel company losing money, the more justification there is to spend money on a promising development along these lines.

There is one point in Mr. Hartford's article which has attracted my attention particularly. It is suggested that a low-speed mill may be more economical, in the long run, than a high-speed mill. It is, of course, admitted that if both mills were operating at capacity the cost per ton of steel will be lower in the case of the high-speed units. This broad statement, logical as it seems, does not check with the trend which may be observed in the industry.

Let's take for instance a hot strip mill. The maximum delivery speed of most mills recently built is around 2000 f.p.m. I have yet to see one such mill that will be actually rolling more than 50 per cent of the time when the rolls are turning. In other words, the interval between the consecutive parts is always greater than the time required to roll a bar. The question is: Why not reduce the speed of this mill in half, reducing thereby the investment for the mill driving equipment, etc.? The rolling mill operators will never stand for such a suggestion. They always claim that high rolling speed is essential to finish the steel at a just right temperature, and that the speed is required regardless of the mill tonnage.

Reheating Is Questioned

Mr. Hartford mentions the possibility of providing reheating furnaces at "strategic intervals" so as to permit rolling at a lower speed and yet at the proper temperature. I am not a metallurgist myself and will not venture any opinion on the possibility of such furnaces being provided, for instance, at hot strip mills. Assuming that this is practical, it is a moot question whether the total investment and the operating costs (including the cost of fuel for these reheating furnaces) will be lower with the suggested layout.

If we consider now a cold reduction mill, then the time factor, i.e. the ratio of actual rolling time to the total operating time, is considerably higher than 50 per cent, and can easily be as high as 75 per cent and 80 per cent. In such a case the reduction of rolling speed will directly affect the tonnage. I question whether even in this case it will be economically sound to build cold strip mills at lower speeds than are prevailing at the present. In the first place, an output of a hot strip mill is usually taken care of by more than one cold mill. If the total tonnage is low, it is more reasonable to have fewer cold mills, but operate the latter at a high speed.

ELECTRICAL ENGINEER

Pittsburgh

Average Cost the Key

To the Editor:

I have just had an opportunity of reading your article on "Steel Producers Out Millions on Recent Sales Drive." (STEEL, June 26, p. 15.)

In my opinion, there is no particular reason why the steel industry should have "pegged" prices, other than that as a major industry it might be to the advantage of the majority of people if the prices were controlled. These prices should be arrived at on an *average cost by all mills.*

I have reason to believe that even at the low prices recently quoted some of the steel mills could make a profit.

There is no question, but the steel industry should put its house in order, establish fair prices, and maintain them.

W. W. WINDAHL

Purchasing Agent,
Corry-Jamestown Mfg. Corp.,
Corry, Pa.

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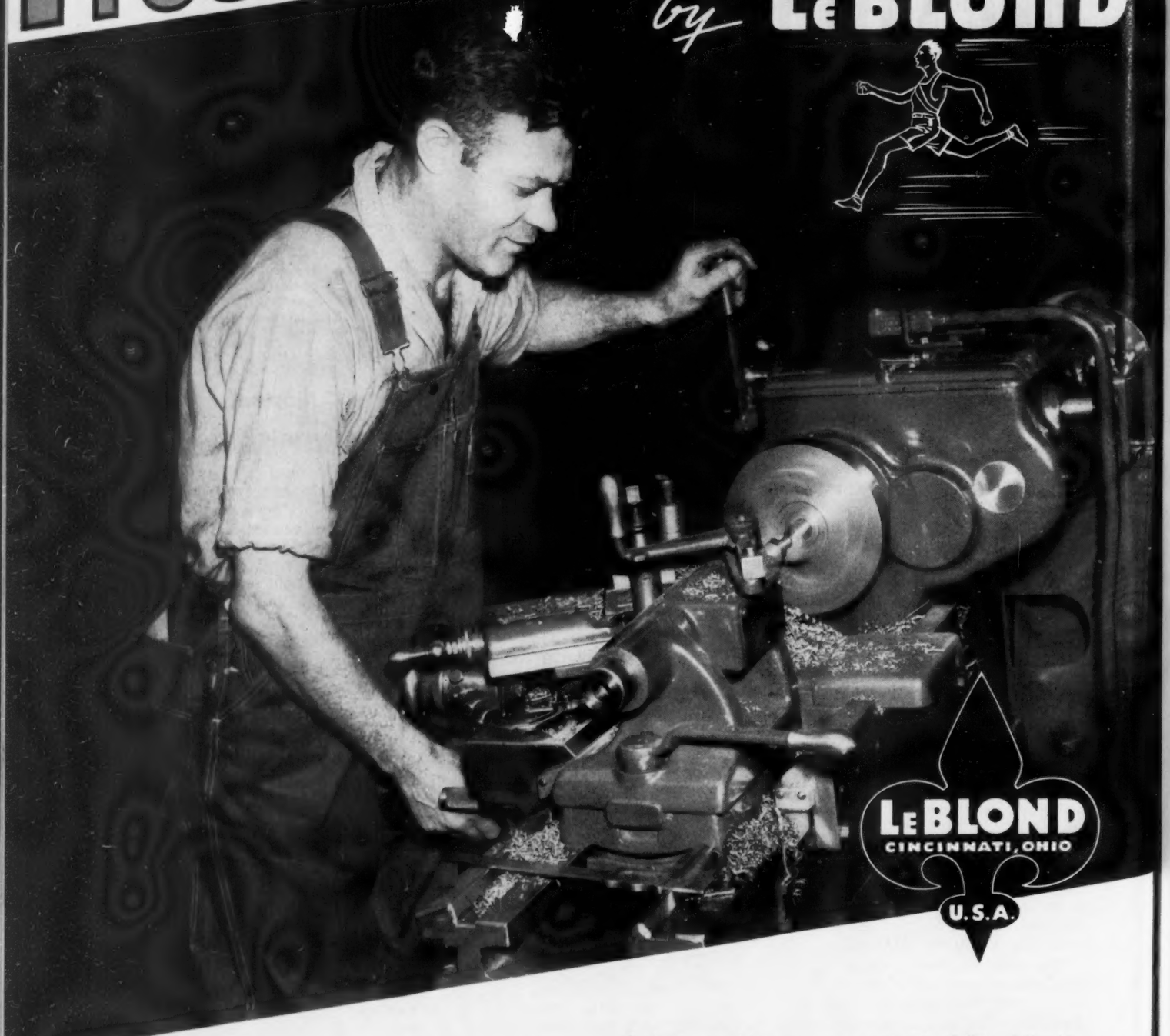
by LeBLOND



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